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REPORT

ON

THE MEDICAL TOPOGRAPHY AND STATISTICS

OF

COORG.

COMPILED FROM THE RECORDS

OF THE

MEDICAL BOARD OFFICE.

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God
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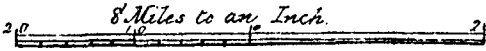
SKETCH
of the
NEELGHERRY HILL
shewing also
The several PASSES and ROADS
leading to them

Scale
8 Miles to an Inch.



Explanation

A.B.C. New line across the Burgoor Hills to avoid the feverish valley. and Pass of Guzlehutty. The new Pass is traced by a dotted line. — The Boundary of Mysore is coloured green. The British territory red.

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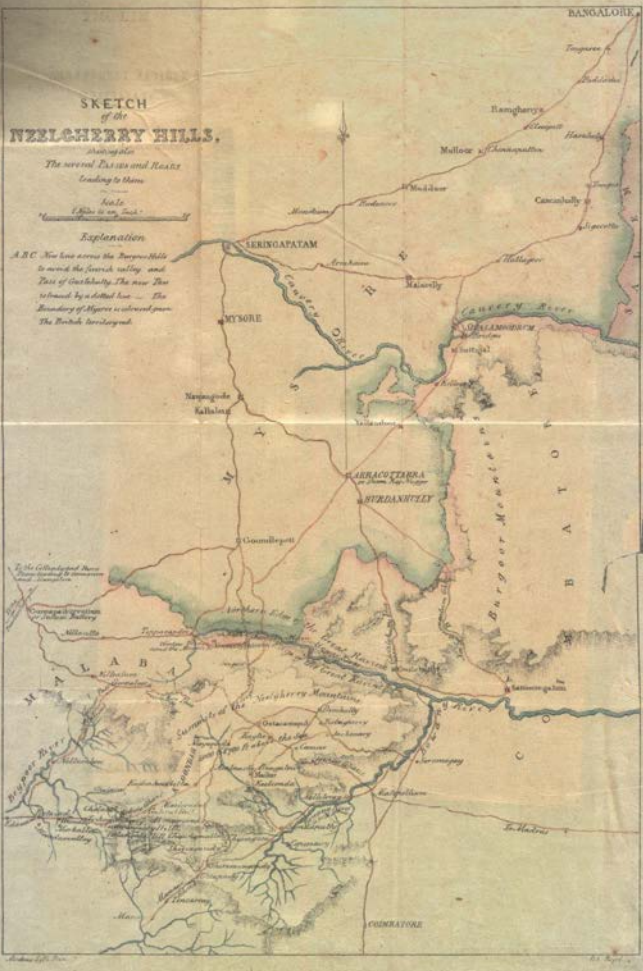
SKETCH
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Miles to an Inch
Explanation
A B C Now lies across the Bargoor Hills
to avoid the Feerish valley and
Pass of Gazelhatty. The new Line
is traced by a dotted line — The
Boundary of Mysore is coloured pink.
The British Territory red.
BANGALORE
Tongaree
Rayghery
Mallour
Caucombully
SERINGAPATAM
Seringapatam
Malavelly
MYSORE
Caucery River
Caucery Delta
Nunjengode
Kallalam
Caucery
Burgoor Mountains
Gommelpetti
Tippagoondy
Attimallee
Bellary
Sattiemgalim
Coimbatore
Coimbatore
Palgautcherry
Palgautcherry
Pollachy
Pollachy
Dindigul
Dindigul
Madura
Madura
Tinnevelly
Tinnevelly
Cape Comorin
Cape Comorin
Ramnad
Ramnad
Tondy
Tondy
Negapatam
Negapatam
Tranquebar
Tranquebar
Pondicherry
Pondicherry
Cuddalore
Cuddalore
Porto Novo
Porto Novo
Madras
Madras
Arcot
Arcot
Vellore
Vellore
Chittoor
Chittoor
Cuddapah
Cuddapah
Nellore
Nellore
Ongole
Ongole
Guntoor
Guntoor
Masulipatam
Masulipatam
Ellore
Ellore
Rajahmundry
Rajahmundry
Vizagapatam
Vizagapatam
Ganjam
Ganjam
Berhampore
Berhampore
Chicacole
Chicacole
Vizianagram
Vizianagram
Bimlipatam
Bimlipatam
Jaggernaut
Jaggernaut
Cuttack
Cuttack
Pipley
Pipley
Balasore
Balasore
Hidgellee
Hidgellee
Midnapore
Midnapore
Calcutta
Calcutta
Hoogly
Hoogly
Burdwan
Burdwan
Moorshedabad
Moorshedabad
Rajemahal
Rajemahal
Dacca
Dacca
Jessore
Jessore
Backergunge
Backergunge
Chittagong
Chittagong
Arracoottaira
Nerdannully
Seringapatam
Mysore
Coimbatore
Palgautcherry
Pollachy
Dindigul
Madura
Tinnevelly
Cape Comorin
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Hidgellee
Midnapore
Calcutta
Hoogly
Burdwan
Moorshedabad
Rajemahal
Dacca
Jessore
Backergunge
Chittagong
MALABAR
COROMANDEL
COAST
Bridgewater River
Caucery Delta
Burgoor Mountains
Seringapatam
Mysore
Coimbatore
Palgautcherry
Pollachy
Dindigul
Madura
Tinnevelly
Cape Comorin
Ramnad
Tondy
Negapatam
Tranquebar
Pondicherry
Cuddalore
Porto Novo
Madras
Arcot
Vellore
Chittoor
Cuddapah
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Dacca
Jessore
Backergunge
Chittagong

COORG.

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COORG.

Situation, boundaries & extent. The principality of Coorg, or *Kodoogoo* as it is called by the natives, is situated in the line of the western ghauts, between latitude 12°, and 12° 52′ North, and longitude 75° 30′, and 76° 10′ East; its dimensions are, length 58 miles, and greatest breadth 25 miles; it however varies in breadth considerably, and on a rough computation, its surface may be stated to be about 1420 square miles. It is bounded on the north and east by Mysore, on the south by Wynaad, and on the west by Malabar and South Canara, which are interposed between it and the sea; its distance from which is in most places about 45 miles. It is strictly speaking a mountain region, the lowest part being elevated not less than 3,000 feet above the sea.

General description of the country. The entire country consists of a succession of lofty narrow ridges having valleys of various extent between them, the ridges, lie parallel to each other, commencing in general with a steep abutment to the westward, and running in the general direction of the western ghauts, viz. from north-west to south-east, until they terminate in the plains of Mysore and Wynaad; of these numerous ridges the following are the most remarkable.

The first to the north-ward rises above the Bizlee ghaut, and terminates at the Cauvery, near RamasamyConawah, and is of no great elevation; it separates the districts of Yellooserza-shee-mee to the north, from the rest of Coorg.

Next to this, with the table land of Somwarpett intervening, is a ridge, the western extremity of which commences by a remarkable bluff peak of considerable elevation, called Poopayherry or Soobramuny, well known as a land mark; and which is regarded with superstitious veneration, the natives of the country considering it unlucky to ascend it, ex-

cept as a penance to wipe away sin. The scenery round its base is bold, rocky and grand, and towards Somwarpett, it becomes exceedingly picturesque, forming a succession of beautiful grassy downs, open glades, and clumps of forest trees, resembling the finest park scenery in Europe.

The next ridge in succession has three rather marked rocky peaks, the sides of which slope abruptly to the north and south, into two deep valleys, through which run the branches of the Haringhee river; the scenery here is also very pleasing.

After this comes the table land of Merkara, which is terminated on the south by a sharp declivity of 5 or 600 feet, forming the northern boundary of the great valley between Merkara and Nakanaad; it is about 18 miles in length by 13 in breadth, and consists of a succession of low narrow ridges, with fertile valleys interposed; the lowest, being nearly in the centre, forms the bed of the river Cauvery. At the north-west angle of this valley there is a break in the line of ghauts, forming what is called the Sumpajee valley, which leads by a gradual slope into the low country. The southern termination of the valley however, becomes abrupt, a ridge in this direction rising suddenly to the height of about 1000 feet; and on the west it plunges still more suddenly into Malabar, by a fall of between 4 and 5000 feet. It presents sundry peaks the most remarable of which is Tadiandamole, the highest in Coorg.

A continuation of the valley to the south-east, leads into the talook of Kiggutnaad, which is of considerable extent, but much overgrown with jungle; and further to the south-east rise the Brummagherry mountains, forming the boundary of the country in this direction; they are of considerable elevation, covered with forest trees, and abound in game; like the other mountains of Coorg, the ridge on the top is very narrow.

The general aspect of the country varies considerably in the different talooks. In the vicinity of Somwarpett, the hills are gently rounded, alternating with sloping glades, inter-

spersed with clumps of forest trees; near Merkara the hills are closer together, and more abrupt, the ravines deeper, and more wild, and the jungle in the hollows much thicker.

South of Merkara the country appears covered with wood, the only naked spots being the narrow cultivated valleys between the ridges; on descending into it however, it is found to contain numerous open spaces, the woods being neither dense, nor lofty. Kiggutnaad is thickly wooded, and the whole eastern frontier of the country bordered with jungle more or less dense, varying in breadth from 8, to 15 miles, and communicating with the jungles of Wynaad, and Mysore.

The scenery along the ridge of the ghauts to the westward is very beautiful, and though less rocky and grand than that of the Neilgherries, it is bold and varied in a high degree, the vegetation being of the richest description, and the forest trees of magnificent growth.

The valleys between the ridges, though varying in extent and relative depth, from having the same *general* direction,—i. e. from north-west to south-east,—as the monsoon winds, the temperature of the country is thereby considerably moderated, and rendered equable.

Cuddinegs. or Breastworks.

A remarkable feature of the country, and which attracts the attention of the most casual observer, is the number and extent of the *Cuddinegs*, or breastworks, which surround and intersect it in every direction. Their total linear extent,—being in many places, double, triple or quadruple—cannot be short of 5 or 600 miles; and when it is stated, that they are generally from 15 to 25 feet high, with a ditch in front of 10 feet deep, by 8, or 10 wide, some idea may be formed of the labour bestowed in their formation. The natives are entirely ignorant of the period of their construction, and of the purposes for which they were intended, generally attributing them to the *Pandeoos* or sons of Siva. That they are the works of a very remote antiquity is evident from the loss of all tradition regarding their uses, as well as from the more unequivocal testimony of enormous trees, probably the

growth of ages, which are found springing out of the walls. No satisfactory reason for their construction has yet been assigned; defence could not have been the only object, as they face one another in certain places, and in others, three or four ranges are found directly behind each other.

Subjoined are the elevations above the sea, of some of the more remarkable points in Coorg.

Poopagherry	Feet	5,682
Tadiandemole near Nakanah	„	5,781
Merkara (B. W.)	„	4,506
Nakanaad palace (B. W.)	„	3,797
Soorlaby, northern range (B. W.)	„	4,527
Bittatoor table land, (W. S. W. of Merkara) (B. W.)	„	4,824
Veerajunderpett palace (B. W.)	„	3,399
Highest point of great road from Merkara to Frazerpett (L.)	„	4,781
3 mile stone Do. (L.)	„	4,500
Bhoeekerry hill Do. (L.)	„	4,500
Frazerpett Do. (L.)	„	3,200
Coloor Betta (near Frazerpett) (L.)	„	4,500

Rivers

The principal river of Coorg is the Cauvery, by means of which and its tributaries, nearly four-fifths of the country is drained. The only river of considerable size flowing to the westward, is the Burrepollay, which rises in Kiggutnaad, and descending abruptly through a series of deep and rocky ravines, in one of which it forms a superb cascade 2 or 300 feet high, flows along the base of the hills, by the Huggala ghaut, where it is known as the stony river, and disembogues itself into the sea a few miles north of Cannanore.

The Cauvery rises near the top of a hill, on the very verge of the western ghauts, and descending through the great valley between Merkara, and Nakanaad, makes a sudden turn to the north, and flows for 20 or 30 miles along the

(B. W.) ascertained by boiling water, (L.) by levels taken in constructing the new road.

eastern frontier, receiving in its course several large tributaries, the principal of which is the Soornauretty, or Haringhee, which drains the northern half of the country, and enters the Cauvery between Frazerpett and Ramasamy Conawah. Another large tributary of the Cauvery is the Litchman-tierth, which rises at the foot of the Brummagherries, flows north-east into Mysore, and joins the Cauvery close to Hoonsoor.

The Cauvery is not rapid in any part of its course through Coorg, and its current is in general tranquil, except at a few places where it traverses beds of granite rock; it is fordable at almost all points in the dry season, but during the monsoon at Frazerpett, where it is 225 feet wide, it rises to the height of from 20, to 30 feet.

Morasses. There are no lakes in any part of Coorg, and but few morasses or bogs, except on the site of deserted rice fields, from which however no noxious exalations appear to arise.

Climate. The temperature of Coorg is moderate and equable, the daily range of the thermometer within doors, not exceeding 6° or 8°, often not more than 2°; the thermometer seldom rises higher than 74°, or falls below 60°, in the open air. The range is a little higher during the dry season, when the daily extremes are from 52° or 53°, to 68° or 70°; the annual extremes are probably 52°, and 82°.

Thermometric ranges.

Barometrical observations. The maximum height of the barometer occurs during the dry season, when the mercury stands at 26.220, and the lowest in July, during the monsoon, when it falls to 25°. 912. The greatest daily range observed has been, 076′; the mean daily range, which is very regular being 050. The diurnal maximum occurs at 10 A. M. and the minimum at 5 P. M., with such regularity, that errors in the supposed time, have often been detected by reference to the barometer. This instrument however offers no indication of approaching changes of weather, nor has it been observed to be influenced by the lunar phases.

Hygrometer. The hygrometrical state of the atmosphere, during half the year, is that of extreme moisture, closely approaching to saturation. During the hot season it is occasionally very dry, and sometimes undergoes most remarkable fluctuations without evident cause, and without any perceptible difference either to the eye, or to the feelings.

Detailed observations on climate. A few detailed observations on the climate, at different seasons of the year, are here given.

The months of January and February are cold, and excessively dry, the range of temperature being from 53°, to 70°, or 72°; the mornings and evenings are to the feelings very cold, while the heat of the sun, in the middle of the day, is tempered by a constant cool breeze, from the north-east, which frequently blows with such violence, as to raise clouds of dust, and become unpleasant.

In March, the cold of the nights becomes less sensible, and the days are warmer, while the wind is less violent, the air still continues in general dry, but fluctuates considerably in this respect.

April and May are usually very pleasant months, the heat of the day which begins to be oppressive out of doors, being tempered by frequent heavy showers, and thunder storms; occasionally, though rarely, the air is close, but the nights are almost always cool.

In June, the monsoon sets in, and at the commencement is seldom violent, but about the end of the month the rain frequently falls in torrents. Between the 22d and 27th of June 1835, there fell twenty seven inches of rain, nearly equal to the aggregate annual fall in England; rain continues during July, August and September, the air becomes loaded with moisture, the sun is seldom seen; and when it ceases during short intervals, a dense fog usually prevails. The temperature at this season is wonderfully equable, the extremes of the thermometer in the open air, being 56°, and 65°.

In October, an interval of bright and beautiful weather generally occurs, rendered the more delightful by contrast,

and by the intense green of the luxuriant vegetation; about the commencement of the month the wind sets in from the north-east, and when strong, is piercingly cold.

November is an unpleasant month, the weather being blustery, cold and showery, and there are frequent cold heavy fogs.

In December, fogs are prevalent, but towards the end of the month the weather becomes settled, when it is clear and cold, the mornings and evenings being intensely cold to the feelings.

Salubrity of the climate for Europeans.

As respects the very important point of health, there can be no hesitation in stating, that the climate of Coorg appears to be well adapted to the European constitution, provided there exists no tendency to visceral congestion.

In the great majority of Europeans, the equability of the temperature,—the average of which 60°, is that generally considered most favorable to health—the coolness of the nights, and, the advantage of being able to take exercise in the open air at all hours, during a considerable portion of the year, exert a most beneficial influence as regards health, strength and appearance; European children are likewise strong and healthy. No slight proof of the congeniality of the climate for Europeans, is the fact, that dogs of the European breed, thrive remarkably well in Coorg, and are exempt from many diseases common to them even in southern Europe.

To the same cause, equability of temperature, the comparative immunity from rheumatic affections, coughs, colds &c. which is here enjoyed, may be attributed; although the atmosphere is, throughout a great part of the year, loaded with moisture.

Diseases which become aggravated by the climate of Coorg.

Certain complaints such as asthmatic affections, are generally aggravated by a residence in the upper parts of Coorg, and the rarefaction of the air may probably be sufficient to account for this cir-

cumstance; chronic affections of the liver, are also apt to put on a more formidable appearance, partly from checked perspiration, in the damp cold seasons of the year, and the want of exercise during the monsoon; in dysenteric complaints when the tone of the intestinal canal has been much impaired by the disease, great care is necessary to prevent diarrhœa supervening, which is at all times obstinate, and frequently resists every means of cure, unless change of climate is restored to; Frazerpett is of great advantage in this respect, affording a considerable change, within a short distance.

Effect of climate on Natives of the Country.

Natives of the low country suffer a good deal, on first arriving in Coorg, from fever of the intermittent type and bowel complaints, occasioned in a great measure by their being imperfectly clothed, by sleeping on the ground, and indulging in the use of raw vegetables; on becoming acclimated however, they enjoy as good health as in the most favorable parts of the low country, and strange as it may appear, the monsoon season seems to agree best with them.

A few casualties which have lately occurred, have been principally from congestion of the lungs, always a formidable complaint in natives; the climate appears decidedly inimical, to the cure of cuts, wounds and sores, which are often totally unmanageable, without change of air. This is a peculiarity it is believed of other moist climates of India; such as the coasts of Malabar, Bombay, Aracan, and Tenasserim.

The tables appended contain an abstract of a daily atmospherical register kept with but little intermission, from 1st June 1835, to the 31st May 1837, and though imperfect from unavoidable circumstances, will suffice to give a general idea of the climate. See table at the end of the report.

Geological features of the country.

The geological formation of the country in the vicinity of Merkara, bears a close resemblance to that of the Neilgherries as described by Dr. Benza.* The

* Journal of Madras Asiatic Society No. 13, page 211.

rocks are primitive, consisting mostly of sienite, occasionally traversed by green stone, the whole being covered with a thick cap of lithomargic earth, composed of felspar in various stages of decomposition, the agglutinating basis being argillaceous earth, coloured by oxide of iron. In some places the agglutination is so complete as to form laterite, or soap stone, and the whole is traversed by veins of quartz, and of nearly pure felspar; the latter also occurs totally decomposed, in which state it is commonly called porcelain earth, and is used as a white wash for houses, and for cleaning soldier's belts &c.

The greenstone traverses the sienite at several places to the south of Merkara, but the section is imperfectly seen, it is of a very hard texture and receives a beautiful polish, and is occasionally found with minute crystals of pink felspar interspersed through it, but these disappear in the polishing; the section presents a uniform smooth surface, of a dark-blackish green colour*. The sienite is an admirable building stone, but its hardness renders it too expensive for common use.

Immediately over the lithomargic earth, is a stratum varying greatly in thickness, of rich vegetable mould, resulting from the decomposition of the luxuriant vegetation with which the whole country is clothed, during the greater part of the year; on the edges and slopes of the hills this stratum of earth is comparatively thin, but in the valleys and hollows into which it is washed by the heavy rains, along with a vast quantity of heterogeneous detritus, it accumulates to a great thickness, and forms a soil of great fertility, producing, with very little assistance from manure, returns of from 50, to 80 fold.

Water. Water is in general of good quality, but during the monsoon it is necessarily charged with considerable quantities of silt and mud, washed down from the higher grounds.

* A small slab of this description found in the palace at Merkara, is said to have been used as a mirror; some large blocks (4 feet by 2½ and 6 or 8 inches thick) were made into couches, which at the sale of prize property produced large prices.

Causes of fever and bowel complaints.

The climate in many places, for two months previous to the setting in of the monsoon, when frequent heavy showers fall, is more or less unhealthy,* and fever and bowel complaints prevail to some extent, which the natives attribute to the mixture of the old and new waters as they express it; and there can be no doubt, that the first portions of water which percolate through the ground, after a long period of dry weather, becoming charged with saline particles, and decaying animal or vegetable matter, must be more or less deleterious. Europeans are more in the habit of attributing epidemics to noxious exhalations, but it is difficult to account, on the score of malaria alone, for the season preceding the monsoon being the most unhealthy, in the south of India, while in Candeish, the *terraie* of Bengal &c. the close of the rains is the most sickly season.

The period at which the military suffer most is the dry weather, evidently from exposure to the greater variations of temperature, which occur in that season, and to which their duty as guards and sentries at night subjects them.

Their febrile complaints however never put on the malarious, or intermittent type, and are rarely dangerous except when complicated with pulmonary affections.

Botany of Coorg.

The botany of Coorg is as yet an unexplored field, and would amply repay the attention of a competent observer.

Rice.

Rice which forms the staple article of the country, is of a coarse quality and not esteemed in Mysore or to the eastward, three varieties of it are produced, and the principal market for the surplus which is considerable is Malabar.

Raggy.

Raggy is cultivated in the lower parts of the country, to a considerable extent; in the upper country, it

* Particularly in Kiggutnaad, and the jungles on the eastern border of the country where fevers are so prevalent at this season as to be called Rog or Epidemic. The same is the case in the jungles surrounding the base of the Neilgherries.

is confined to patches of ground on the slopes of the hills, from which the jungle has been cleared, and the grass burnt for manure; only one crop is raised, after which the ground is allowed to lie fallow for some years, before being cultivated, when the same process is again repeated.

Tobacco. Tobacco of an inferior sort, is grown in small quantities, as also hemp, ginger and turmeric for domestic uses; coffee grows wild on the eastern border, and might be much improved.

Cardamoms. Cardamoms are found in great abundance and of good quality, in the jungles, along the western slope of the ghauts, and produce a considerable revenue; the wild nut-
Nutmegs. meg is also very common.

Sandal wood. Of the more important productions of the jungles, may be enumerated sandal wood, produced chiefly on the eastern border of the country.

Teak wood &c. Teak wood grows on the malabar side of the ghauts, also chunpunee, blackwood, darcheenee, and many other valuable timber trees.

Cucurbitaceous plants. Cucumbers and most plants of the cucurbitaceous tribe grow luxuriantly, and there is no doubt that almost all European vegetables, and some fruits, might be brought to perfection in various parts of the country.

Domestic animals. Of the domestic animals found in Coorg, the bullock is much the most common; it is of a small breed, and does not thrive in the upper country; the same is the case with sheep; but goats thrive better; horses are only kept by a few people of the higher ranks.

Wild animals. Of the numerous wild animals, the most remarkable is, the elephant, large herds of which are found in all
Elephants. &c. the jungly parts of the country, and they often do much injury to the crops. They are occasionally killed by large

parties of hunters assembled for the purpose, and since a reward for destroying them has been granted, numbers are shot annually by individual sportsmen. They are occasionally caught in pits and tamed, but are considered inferior to those of Ceylon, or Bengal.

Tigers are frequently met with, as are also cheetas and tiger cats; they appear to lose much of their ferocity in this climate, and seldom attack a man unless wounded.

Bears are comparatively rare; they appear to resemble those found on the Neilgherries, but differ from them in one remarkable particular, being exceedingly fierce, and more dreaded by the Coorgites than tigers.

The wild dog *ken-nai, sonakoota,* or *d'hole,* is frequently met with in packs of ten or twelve; they are as large as a greyhound, stronger built, and very fierce, they have been known to attack bullocks.

Several species of martens, polecats and weasels are met with.

The samber or elk is common in the more retired jungles, and the animal is hunted for its flesh, which is esteemed by the natives.

The bison as it is called is common on all the mountain ridges, where it attains to the enormous size of 17 hands high, and upwards.

The muntjak (cervus muntjak, of Cuvier) or jungle sheep, as it is sometimes called, is not uncommon, but is shot with difficulty from its frequenting the thickest coverts; it is distinguished by having canine teeth in the upper jaw, and hair covered bony processes on its skull of about four inches in length, on which the horns are supported, its flesh is much esteemed. The memina, or mouse deer is occasionally seen; its flesh is also considered a delicacy. The cheetul or spotted deer, and wild hog, and large sized hares are found in great

numbers, in the more open parts of the country. The woods are tenanted by troops of monkeys, and squirrels; of the latter there are three or four varieties.

Birds. Of the feathered tribe, the most remarkable are, the wood-cock, which is comparatively rare, and evidently migratory; the snipe, found in considerable numbers, jungle and spur-fowl, several species of cranes; Pigeons are also numerous, including the imperial pigeon, blue pigeon, the green dove a beautiful bird, and the common dove. Falcons and hawks are numerous, as are also one or two descriptions of eagle; wood-peckers exist in great variety, and of the most beautiful plumage. The baceros rhinoceres, or hornbill, of two or three varieties is found common in all parts of the country.

Fish. The Cauvery and its tributaries are well stocked with fish, which do not differ from those found in the rivers in the low country.

Reptiles. Among the reptiles are great numbers of lizards, several species of snakes, two or three of which are venomous. The cobra-de-capelle is not uncommon in the lower parts of the country; a snake of a beautiful pea-green colour with black spots, is found near Frazerpett, which is provided with poison fangs, and is said to be deadly. The bite of a species of snake found in Kiggutnaud is said to produce extensive ulcers, which are difficult to heal; scorpions and centipedes are not common; alligators are occasionally seen in the Cauvery.

The jungle leech must not be omitted to be mentioned, being one of the greatest pests of the country; after the first showers of rain on the setting in of the monsoon, it is impossible to quit the road for any distance without being covered by numbers of minute leeches, about an inch long, and not thicker than a hair, which quickly insinuate themselve under the clothes, and fasten on the skin, their bites often producing great irritation; they disappear again in the dry weather, but even then, the unwary intruder into

shady nooks, if moist and covered with leaves, is often punished for his temerity.

Insects. The entomology of Coorg if explored would doubtless be found rich and interesting. Silk worms are not bred; bees are seen in vast numbers, and a considerable quantity of wild honey and wax are found in the woods.

Roads. Previous to the occupation of the country by the British in 1834, the roads were in a primitive state, wholly impracticable for wheeled carriages, and scarcely less so for bullocks, it having been part of the policy of the Rajahs, to render their country as little accessible as possible, from an idea common to mountaineers in all parts of the world, that the chance of invasion and conquest, was thereby diminished, and which to a certain extent, is undoubtedly true; for the same reason some of the more direct, and practicable lines leading to Merkara the capital were shut up, and travelling by them prohibited.

The only track, which was entitled to the name of a road, commenced at Periapatam, passed through a thick jungle to Veerajunderpett, and led by a very steep pass, known as the Huggala, or Hinghin ghaut to Cannanore; this road was constructed by a party of pioneers, some years ago, but the pass is so steep as to be nearly impracticable for bullocks, or horses, and totally so for any other species of carriage,* and is in fact the worst ghaut in the south of India; the part of the road between Periapatam and the top of the pass, is better constructed, and with little trouble, might be made practicable for carriages; but the ghaut, and the road for eight miles from the foot of it towards Cannanore, is not capable of much improvement. This and the next mentioned road formed the line of advance of the southern column of the attacking army.

From Veerajapett† a cross road leads N. N. W. to Merkara 22 miles; this is also nearly impracticable in the wet sea-

* The declivity is in many places 1 in 3, seldom less than 1 in 4; the Ghaut is nearly 5 miles long.

† 1,100 feet lower than Merkara.

son for bullocks, and totally so at all times, for carriages, passing as it does over the ridges of all the intervening hills. On reaching the base of the table land of Merkara, here about 600 feet high, it ascends by a very steep, but well made road, the declivity of which is 1 in 3½, or 4 feet; an improvement on this line is in contemplation, and partly executed by the superintendent of Coorg, which by following the prolongation of one of the ridges, accomplishes the descent at the rate of 1 in 13 or 14 feet; and effects besides a great saving of distance.

From the bottom of the last mentioned ghaut, or pass from the Merkara table land, branch roads lead to Nakanaad palace, 18 miles, and to Talla Cauvery, the source of the Cauvery, 20 miles; they are of the same description, as the Veerajapett road, exhibiting a contempt for all the acknowledged principles of road making. From Talla Cauvery there is a tolerably easy but very long pass into Malabar, called the Thorakana ghaut.

At Periapatam commences another road, leading through thick jungle to Nunjerajpett, near the Cauvery, and thence to Merkara. This though traversing sundry steep acclivities, and descents, was formerly much the most practicable and frequented way of access, but is now totally disused.

From Merkara westward, a foot path leads to the edge of the table land 12 miles, descends by a very steep pass called the Talnair or Kurrunkall ghaut, 3 miles long, barely practicable for bullocks, and thence through thick jungle to Bellarypett, and by Pootoor to Mangalore; by this line the north-west column of attack was to have advanced, but got no further than Bellary-pett.

A road leading north from Merkara, branches off into one running north-east, by Hallary to Ramasamy Conawah, by which the principal column entered the country; and a second by Jumboor Bucka—at which latter place the north

column was repulsed—Somwarsunta, and Coodlipett, into the Mysore district of Munjerabad.

The whole of these, are in most parts little better than mere foot tracks, full of stones, and ruts, passing over the steepest acclivities, without an attempt to avoid, or render them less steep by zigzags, or turns, and in short in the very rudest state.

Since the occupation of the country by the British, an excellent road has been made by the corps of sappers and miners, from the frontier of Frazerpett,* on the Cauvery,—where it communicates through Periapatam or Betumdapoor, with the great road to Bangalore—as far as Merkara; it is 25 feet wide throughout, and in every respect admirably constructed; the slopes where occuring, rarely exceeding 1 foot in 14 or 15, but are generally much less.

The advantage of a good road in a military point of view, was perhaps never more apparent, than on a late occasion during the insurrection in Canara, where a field battery of foot artillery, with guns, train &c. marched with ease in six hours, from the frontier to Merkara; the force when entering the country in 1834, by nearly the same line, having been four days in performing the distance.

The same line of road is continued from Merkara, by a ghaut called the Soolea or Sumpajee ghaut, into Canara; by an easy slope along the north declivity of the table land, to the head of the Sumpajee valley,—5 miles west south west of Merkara—from whence there is a gradual slope of not more than 1 foot, in 24 or 25, to Soolea; from the latter place to Bellarypett and Mangalore, the country is nearly level. The distance by this road from Bangalore to Cannanore, and Mangalore, is less than by any of the old tappal, or dawk routes; and greatly facilitates the intercourse between the south of Mysore, the whole of Coorg, and the Malabar Coast.†

* 1300 feet lower than Merkara.

† Of the other passes into the country the Peria ghaut in Wynaad, is barely practicable.

Mineral productions. But little is yet known of the mineral productions of the country; the iron and steel used by the natives, are procured from Mysore.

Population. From the subjoined table the population would appear to be considerably on the increase; owing in a great measure to immigration from the neighbouring countries, on account of a preference for the system of government recently introduced into Coorg.

No accurate accounts of the marriages, the numbers living at different ages, or of the relative proportions of Coorgites foreigners, slaves, &c. can be given, partly from the apathy and ignorance, common to all native states, and partly from a fear of exciting the suspicion of the people, if enquiry was to be pushed too far on such subjects. The number of slaves is however supposed to amount to between 10 and 12000, and of foreigners, the estimates have varied, from 1,500, to 3000.

Population of Coorg (Proper) from the Jummabundee Returns for 3 years.

Year.	Coorg.					Other classes.					Grand Total.	Births.	Deaths
	Men.	Women.	Boys.	Girls.	Total.	Men.	Women.	Boys.	Girls.	Total.			
1834——35	3845	4039	3413	2907	14204	10531	13890	8651	7293	43365	57569	*	
1835——36	3602	3717	3255	2704	13271	14533	14599	9034	7542	45709	58987	2323	1675
1836——37	3955	4157	3774	3141	15027	15815	15803	10424	8368	50410	65437	3194	1098
Increase in the last year....	353	440	519	437	1749	1282	1204	1390	826	4701	6450	871	
Decrease.....													577

* No calculation is founded on this year's returns, not being perfectly accurate.

† Part of this increase is from 4354 labourers who have immigrated into the country during last year, the absolute increase is therefore 2.096

From the foregoing table it would appear :

1st.—That the population—exclusive of immigration—has been increasing in the ratio of 3.43 per cent, per annum.

2dly—That the births, exceed the deaths,—on the mean of 2 years—in the ratio, of nearly 2, to 1.

3dly.—That the number of boys exceeds the number of girls, in the ratio of 37, to 31, but in adults, this is reversed, the females, being to the males, as 41, to 39 nearly: the relative ages however not being given, no deduction can be made to account for this circumstance.

4thly.—The proportion of deaths in the years 1835-6, was 1 in 35. and in 1836-7, only about 1 in 60 : the deaths to births in 1835-36 were as 1, to 2 nearly, in 1836-7 as 1, to 3 nearly.

It is impossible to form any idea of the average longevity of the inhabitants, natives having but vague and imperfect notions of dates, they however all agree in stating that men live much longer than women, which they attribute to the early marriages of the latter; that more male children die, than females; and, that mortality among children under one year old is great, which two last statements correspond with similar facts elsewhere.

Towns & Villages. The Coorgites have only three villages, or towns properly so called, Merkara, Somwarpett, and Veerajunderpett; the latter being the largest, and principally inhabited by native christians. The members of each family live together to the number of 20, or 30, or even 60 or 70, and when a family becomes too numerous, an additional dwelling is built in the vicinity of the family abode, which is generally on the side of a hill surrounded by wood, and near their Houses. hereditary fields, to which they are much attached. Their houses are generally substantially built, having thatched roofs, and are kept very clean and comfortable ; those of the better sort, form a hollow square, with a small court in Fuel. the centre. Fuel is abundant in every part of

the country, and upon the whole the people may be said to be in easy circumstances, and are well provided with food, lodging, and raiment; a great equality of feeling prevails among them, and there is but little disparity in point of wealth.

Clothing. Their clothing is in general good, and sufficient; that of the men consists of a turban of white or blue cloth, one or more long gowns, fitting tight round the body and arms, and reaching to the feet when in dishabille, but tucked up as high as the knee when taking exercise, and secured round the waist with a handkerchief or shawl, over which is worn the belt and knife peculiar to the country, and now well known. The gown or coat is usually of thick white cotton stuff,—more rarely blue—with red embroidery on the shoulders; but they prefer broad cloth when able to procure it. The women wear one or more cloths, reaching from the breast, to below the knee; leaving the top of the shoulders naked and they have usually a small white cloth round the head.

Physical appearance of the Natives. The men, as is well known, are a handsome athletic race, usually above the middle height, and almost uniformly well limbed. The women are not so tall in proportion, but stout and well looking, though rather coarse. The complexion of the men varies greatly and the women are comparatively fair.

Agriculture. Agriculture is the universal occupation of both sexes, after labouring all day in heavy rain, during which they are most actively employed, a general practice is, on their return home at night, to wash the entire body with warm water, which they say counteracts the effects of wet, and cold; they are however, not particularly cleanly in their persons.

Amusements. Customs. The principal amusements of the men, are hunting, and shooting; these are followed partly from the necessity of driving away wild animals, who would otherwise destroy their cultivation; and partly from choice. At a parti-

cular season of the year, they hold a solemn dance, from which it is thought unlucky to be absent; the men are the only performers, the women being merely lookers on. It is evidently a species of *pyn-hie*, or war dance, in which there are interludes of single combats, the individuals being armed with a long twig in lieu of a sword, and a shield; the people themselves are quite unable to give any account of the origin of this custom.

A very singular custom exists, which is a sort of community of wives, who are common among the brothers of a family.

On the marriage of an elder brother, his wife is considered the property of all the others, and as the juniors successively take wives, they in turn become common to the rest of the brothers. Some curious particulars connected with this revolting custom, are detailed by Connor. Of its origin little is known but it is said to have been owing to a comparative scarcity of women, in early times, and to have since become sanctioned by custon; they appear to be getting ashamed of it, and, it is accordingly wearing out; it may be mentioned that this custom has tended very much to disseminate the venereal disease; the younger members of the family, who resort occasionally to public women, communicating the disease to the wives of their elder brothers, and thus in succession to the whole family. Until aware of this extraordinary custom, astonishment was excited at frequently finding elderly and respectable people affected with gonorrhœa, and syphilis.

Food. The diet of the people principally consists of rice, seasoned with onions, garlic, turmeric, and the other usual ingredients of curry, and is not a little restricted by the prejudices of caste, beef being the only kind of meat not used; but their economical habits prevent their consuming much animal food, except what is the produce of the chase; and in the selection of game they are not very particular; as they eat the flesh of monkeys, squirrels and various other animals, not used by Europeans.

They have usually four meals in the day; first in the morning at 6 o'clock, and afterwards at 10, A. M., at 2, P. M., and

again at 6 or 7, in the evening; at the latter, the principal meal, milk in various forms, but principally butter-milk, is much used. They are not averse to spirits, and on occasions of feasts consume it in large quantities.

Disease. The most common diseases are fever, dysentery, asthma, venereal, piles, dropsy, jaundice, splenitis, and phthisis.

Fever. Fever is mostly of the intermittent type, and not usually of a severe form; in the lower and jungly parts of the country, before the commencement of the monsoon, it assumes a more formidable character, and frequently proves fatal. When recovery takes place it is often followed by jaundice, or splenitis; patients under these circumstances are sure to suffer a relapse the following season, unless change of air
Dysentery. is resorted to: Dysentery is also common, and often very fatal, especially among children; it likewise prevails most extensively in the season preceding the monsoon.

Phthisis. Phthisis is often met with, and is said usually to occur between the ages of 20 and 40.

Variola. Variola is not unfrequent, and formerly used to be very fatal; but the Rajah many years ago, had all his subjects vaccinated; the means adopted for its dissemination being very simple, pins or needles were dipped in virus, and sent to all parts of the country, with directions for the using them. Since our occupation of the country, care has been taken to keep up vaccination, and death from small pox is comparatively rare.

Scrophula. Scrophula is very common, usually making its appearance at the age of puberty, in the form of swellings in the neck to which ulceration succeeds.

Measels. Measles is common, but not severe; and scarlet fever is altogether unknown.

Rheumatism. Rheumatism is not uncommon, but not very obstinate. Cases of insanity are not unusual; and idiocy is frequent.

Venereal diseases. Venereal disease—both gonorrhœa and syphilis is very common, owing to the circumstances before mentioned, and to the loose state of morality, as regards the intercourse of the sexes. Secondary symptoms are of frequent occurrence, and very obstinate; the people are unacquainted with any remedies for its cure, or alleviation except some vegetables.

Primary syphilitic ulcers approach more nearly to the character of the true Hunterian chancre, than is often seen in more civilized societies; the people maintain that the disease was unknown in the country, in any shape, previous to the occupation of it by the Honorable Company's troops, and give as a reason, that they were not allowed to quit the country; and that strangers were prohibited from entering it.

Ulcers &c. Ulcers, and cutaneous diseases are both common and difficult of cure.

Diseases of women. The only diseases peculiar to women, are irregularities of the catamenial discharge generally caused by exposure to cold; and they are said to suffer occasionally from dropsical swellings during pregnancy, which produce abortion about the 6th month. Women are considered to be less healthy, and shorter lived than men, attributed to the community of wives above mentioned; as well as to early marriages. The great mortality among children below one year old, is chiefly from bowel complaints, but no diseases are stated to be peculiar to them.

State of Medical science. Medicine is in a very rude and simple state; there are no hakeems or persons who practice it exclusively, and most if not all diseases are attributed to the influence of an evil eye, or the anger of the gods*; curative measures principally consists in prayers, incantations, and offerings to idols.

No prejudice whatever exists against European medicines, or practice, and people resort readily to the medical officer at Merkara, for advice or assistance; like all natives however,

* The natives rarely admit, that any place is unhealthy; but they say that occasionally, the devil occasions fever of a malignant description in certain places.

they want patience to submit to any lengthened course of treatment, and generally return to their homes, if a cure is not effected in a few days.

Materia medica. The materia medica though simple, and confined to plants found in the jungles, is not without efficacy in mild cases, particularly of a local description.

The following is a list of their chief "remedies."

Name.	Part used.	Medical effects.
Hittee Beejah....	Kernel of fruit....	In small doses of 5 or 10 grains, astringent febrifuge; in large doses narcotic and poisonous.
Thoomba Geedoh..	Expressed juice of the leaves.....	Expectorant; for coughs.
Kodin Kittolee...	do.	Febrifuge, diaphoretic, (ordinary fever.)
Nassoomannee Baroo..... ..	do.	Febrifuge, (continued fever.)
Seepawaruthoo Sigooroo	do.	Astringent, tonic, (chronic dysentery.)
Poda Bellee	do.	Sedative, antispasmodic, (in colic.)
Mavin Beejah....	Fruit, bark and root.....	Astringent, tonic, vermifuge (in dysentery and worms.)
Gajeegatha Gada...	Juice of leaves.....	Diuretic (in dropsy.)
*Numaree Baroo..	Root.....	Febrifuge, diaphoretic (fever and venereal disease.)
Kareemartha Sagooroo	Juice of leaves.....	Purgative.
Sakee Suppoo....	do.	Diuretic (in dropsy.)
Thasula Hoo.....	Juice of leaves internally and externally.	Cooling, demulcent, purgative (in ophthalmia and local inflammations.)
Dalinba Sigooroo..	Do. internally....	Refrigerant, stomachic.
Havin Sapoo. ...	do.	Refrigerant (in erugtive diseases.)
†Haleela Beejah..	Seeds.	Purgative.

Diseases of cattle. Cattle as before observed do not thrive in Coorg; horses are subject in the wet weather, to a disease of the throat resembling laryngitis, which frequently proves fatal in a few hours, even when very active measures are resorted to. The best remedy is bleeding ad deliquium, and firing

* Periploca Indica or country Sarsaparilla, a valuable substitute for the more expensive American article.

† Probably the same as the hirleela-siyah, a common and very excellent purgative, used in Persia.

the throat*. The Rajah was always in the habit of sending his horses to the frontiers during the monsoon, and it is said, that even his elephants suffered if kept at Merkara.

Bullocks are subject to the same disease, but in them it comes on more insidiously, and though equally fatal, does not run its course so rapidly as in horses; it generally commences with purging, which is succeeded by swelling of the throat; occasionally when the animal seems about to recover, ulcers form on the legs, and the hoofs drop off. No cure is known for this complaint, which occurs at all seasons of the year.

It seems difficult to assign a cause for the uncongeniality of the climate to these aninals; the damp atmosphere alone does not satisfactorily account for it, as the climate of many countries in Europe—England for example—famous for the breed of cattle, horses and sheep, is as damp as that of Coorg, during a portion of the year. Cattle are fed exclusively on dry straw, and grass.

No information has been obtained as to the diseases of plants used as food, either by the people, or the cattle, with the exception of rice, which is subject to blight in particular situations, but is never used as food afterwards.

MERKARA.

Situation. Merkara, or Muddykeree, as it is pronounced by the natives, is the modern capital of Coorg, the fort of

Note.—It should have been stated under the head of "Vegetable productions" that an attempt to introduce the tea plant, by seedlings from Calcutta, totally failed, all the plants having withered. This may probably have been owing to want of experience in the cultivators, as a plant given to Colonel Crewe on the Neilgerries, and afterwards transplanted to Manantoddy, and from thence to Merkara, was healthy and covered with blossoms in April 1837.

* Several valuable horses belonging to officers of the 36th Regiment N. I. having died of this complaint at Merkara in 1834, it has since been the invariable custom to send these animals to Frazerpett or Hoonsoor, in the monsoon. A fine arab brought from Tabreez in Persia which had been in the possession of an officer six years, without a day's illness, was carried off by the disease; he was attacked at 7 in the morning, and died at 9 at night, notwithstanding bleeding, blistering, &c., the attack commenced with wheezing, and difficulty of breathing attended with swelling of the throat which gradually increased, (without however producing any febrile symptoms) till it terminated in suffocation.

which was built by Typoo Sultan A. D. 1782; the ancient capital of the province having been the town of Hallary, five miles north-east of Merkara: it is distant from Madras viâ Seringapatam, and Bangalore, 352 miles, from Bangalore 145, from Mysore 70, and from Cananore 68 miles.

Surrounding country &c. The hills around Merkara, arise abruptly from the surrounding country, forming an oblong table land, at the south-east angle of which is situated Merkara; the fort being built on the levelled summit of a small isolated hill.

On the east and north, the hills have a gentle declivity, their sides being clothed with wood; but on the south they are abrupt, precipitous and nearly naked, descending to the low or Southern division of Coorg, to the depth of from 4 to 600 feet.

On the west, the table land is elevated about 3,000 feet above the low country of Umrsoolea. A remarkable peculiarity of the hills is the extreme narrowness of their terminal ridges, which are frequently only a few feet broad, and descend abruptly on each side. They are all of a rounded form, and none rise more than 2, or 300 feet above Merkara. The table land to the west, is broken into numberless small rounded eminences, like reversed tea-cups, the valleys being filled with wood, forming a succession of very picturesque, and pleasing scenery. A peculiarity of the numerous streams found in these valleys, is that they in general flow to to the westward, although their sources in many instances are within a few yards of the declivity of the western ghauts; the country of Coorg resembling in this, as in many of its general features—although on a smaller scale—the western parts of the Neilgherries.

None of the ranges of hills in Coorg appear to possess superior advantages to Merkara itself, in a sanatory point of view.

A small river which falls into the Haringhee rises close to Merkara; there are no lakes, morasses or canals in the neighbourhood.

Watar. Water is supplied partly from the river above-mentioned, and partly from numerous springs in the immediate vicinity of the town and fort, the water from two of which is collected in large stone tanks; and a well of good water also issues from the hill, on which the fort is situated.

Fort and cantonment. The fort is placed as before observed, on the summit of a naturally isolated hill, which has been partially levelled; the soil being litho-margic earth of the same description, as that generally found throughout the country; it is distant not more than 150 yards from the boundary ridge of the table land on the south, with which it is artificially connected by a mound. On the south and south-west slopes of the hill, and below the fort, are the sepoys lines, not very regularly disposed, but tolerably clean and airy, having a stream of running water in the valley immediately below them; the huts are of the description usually erected by sepoys, wattle and mud, with thatched roofs. The regimental bazaar is on the same side of the hill; and on the north side is another artificial mound connecting the hill with the native pettah or great bazaar, which forms a street of good houses, about three quarters of a mile in length, and terminated by two buildings, the tombs of the late Rajahs.

The Fort is an irregular polygon of seven sides, at each of six of the angles of which is a round bastion, and at the seventh, a gate-way; it is surrounded by a single strong wall of stone, about 12 feet high, by 10 thick; with a parapet of masonry 5 feet high, and 4 thick; below the wall on the south, and west sides, is a fausse-braye, and an imperfect ditch; the principal gate is in the east front, and there is a sally port in the north-west angle. There is no well or tank within the fort, though a good spring issues from the base of the hill on the north west, which might probably be struck by boring or sinking a shaft*; great care has been taken in constructing drains, and the fort is at all times perfectly dry and clean.

* Besides this defect it is considered valueless, as a place of defence, against *disciplined* troops, being commanded from numerous points, within breaching distance; and could moreover be easily escaladed.

The outer gate leads to an oblong square, one side of which is occupied by a public bungalow for travellers, the Dewans' cutcherry, and the jail.

Jail. The latter building forms a square, each side of which is 82 feet in length, it encloses a small open court, and is surrounded by a verandah 9 feet wide; it contains, 2 large wards, one 42 feet by 19, the other 28, by 20; and 3 smaller ones, which are usually occupied as an hospital, and as convalescent wards; a kitchen and store room are also attached to it. The wards are all 8 feet high, and have windows 3 feet by 2; the guard room is in front, and the necessary behind, with a deep cess pool adjoining, into which quick lime is thrown at stated intervals, to destroy offensive effluvia. It is a substantial building well adapted for the purposes of a jail, and affords ample accommodation for 100 prisoners.

At the angle of the square is a large and handsome building occupied as a cutcherry, and the Superintendents residence. The second and third gateways being connected, as usual in native forts, by a traverse, lead into the inner square of the fort, which is partly flagged with granite; the south side was formerly occupied by the old palace of the Rajah, but being ruinous, has lately been pulled down.

Rajah's palace. Directly opposite the gate-way, is the new palace, a large square substantial building having numerous windows in front, and built much in the style of a french chateau.

The palace is constructed on a plan much superior to the generality of native buildings, though there is a want of light in the upper and back rooms, which formed the zenanah.

The whole upper story, and a portion of the lower front, is allotted as the officers' quarters, and mess-room; and in the rear is the public treasury; there are also numerous store rooms, &c.

Barracks. The barracks of the small detachment of European artillery consisting of 22 men, are situated in the lower story of the north-west angle of the palace, fronting outwards;

their barrack room is 23 feet long, by 26 wide, and 13 high, having one large window, and one door; the old hospital and guard room are adjoining, being separated only by a partition.

The barracks are sufficient for the accommodation of the party now occupying them, but could hardly afford room for a greater number. The space in rear of the palace, is occupied by a powder magazine; the cardamon godowns, and two small detached buildings with terraced roofs, which have been converted into solitary cells. The latter are dry and airy, though rather cold in the monsoon; no disease has been traced to them.

Hospital. The new hospital lately erected, is about 30 yards from the south curtain of the fort, with which it communicates by a sally port, the space between being the remains of the glacis, part of which has been cut away, to make room for the buildings; but before a good foundation could be obtained a perpendicular escarpment was requisite to be cut to the depth of 15 feet; the floor of the hospital is therefore 15 feet below the foot of the curtain, and the face of the escarpment constitutes a bank of that height immediately in front of the north verandah.

It is a long tiled building consisting of a native, and an European ward, a surgery, and three verandah rooms, enclosed by a verandah 10 feet wide. The native ward is 82 feet, by 21, with a fire place at each end, the doors are 8 feet high, and 4 broad, having swinging glass ventilators above the windows, which are provided with venetians. The walls are 16 feet high.

At the west end is the European ward, 25 feet by 21, with a bath room off the south verandah, the windows are similar to those in the native ward, provided also with venetian shutters, and glass swinging ventilators, there is a fire place also in this ward. A bath room, and a dead room, are attached to the hospital, both of which are 10½, by 8½; they communicate with each other, and each has a glass window 4 by 3

feet, facing the south; and there are separate cook rooms for the natives, and Europeans, and also necessaries.

Population. The population of Merkara, with the exception of a few of the higher class of natives who occasionally reside there, is composed almost entirely of the military, with their numerous dependents and followers, and Mysoreans, who are generally shop-keepers and tradesmen; the subjoined remarks therefore apply principally to the military.

Disease. By far the most prevalent diseases are fevers generally of the intermittent type, and dysentery; next to which in frequency is rheumatism.

Fever. Fever, except occasionally in the cold season, is neither severe nor obstinate, yielding to the ordinary remedies; it is generally of the quotidian type, and seldom produces engorgements of the spleen or liver; the exciting cause can generally be traced to exposure to alternations of temperature; for in the monsoon season when the climate is equable, it is rarely seen; but in the cold weather the disease is now and then complicated with congestion, or inflammation of the lungs, and is then much more formidable. Natives bear depletion better in this climate, than in the low country. Europeans are not particularly subject to fever, at any season of the year.

Dysentery. Dysentery is generally produced by imprudence in diet, or from sleeping on damp ground; it is exceedingly common among children, but is rarely fatal, except when it has existed for some time previous to applying for assistance. The application of a few leeches to the abdomen, and the use of ipecacuanha with extract of gentian generally checks the disease in a few days.

Few cases of dysentery have been met with in Europeans, these were however obstinate; but when the force first entered the country, it was very prevalent, and severe. The climate appears to be inimical to persons suffering from relaxed bowels, particularly if complicated with congestion of the liver.

Rheumatism. Rheumatism is not usually severe, and strange as it may appear, least frequent in the wet season; it now and then becomes necessary to send convalescents from this complaint out of the country for a short time, to prevent relapses.

Wounds and ulcers. Wounds and ulcers are exceedingly troublesome, and frequently slow in healing; the latter in particular sometimes resist every plan of treatment, including active constitutional remedies, and require change of air for their cure.

Cutaneous affections. Cutaneous diseases are rather common, and somewhat obstinate; psora is very prevalent, and a few cases of leprosy have been seen.

Cholera. Cholera has not been known as an epidemic, for many years, but three or four sporadic cases have been met with.

Variola and varicella. Variola is not common, vaccination having been pretty extensively practised, though not without great difficulty, as it frequently fails even in the dry season, and in wet weather seldom succeeds.

Varicella is common, but mild.

Measles and scarlet fever. Neither measles, or scarlatina, have come under observation.

Worms. Worms are very common in children, probably from the use of raw vegetables.

On the whole, as before observed, the climate must be pronounced highly favourable to the European constitution; and but little less so to the natives of the plains, at least after a short residence. There are no diseases which are considered peculiar to any class of the inhabitants.

Diseases of prisoners. The most common complaints amongst the inmates of the jail, are dysentery and fever, both, as might be anticipated, more obstinate and severe, than in the military, or free inhabitants. Subsequent to the late insurrection in Canara when the number of prisoners was greatly increased, they

amounted for some time to 500 and upwards, and were consequently a good deal crowded, the mortality was very high, 14 having died within a very short time, every mode of treatment appeared to be equally unavailing. Most of the sufferers were natives of Umrsoolia below the ghauts, and the complete change of climate and food, doubtless had much effect in producing both the disease, and the unfavorable result.

The following tables shew the nature and amount of disease and mortality which have occurred amongst the native troops at this station from 1835, when first garrisoned, till 1843, a period of nine years; and also amongst a body of prisoners kept here since 1836, a period of eight years.

Table exhibiting the number of admissions and deaths amongst the Native troops stationed at Merkara, during a period of nine years, from 1835 *to* 1843 *inclusive.*

Aggregate strength. 8902. CLASSES.	DISEASES.	Admitted.	Died.	Admissions from each class.	Deaths from each class.	Per centage of sick to strength.	Per centage of deaths to sick.
Fevers.....	Febrisephemera	337	1	1625	19	18 ·254	1 ·169
	„ intermit quot.	1217	10				
	„ tertiana.....	30	1				
	„ remittens....	23	5				
	„ com: cont....	18	2				
	Cholera.....	7	4	7	4	0 ·078	57 ·142
Diseases of the abdominal viscera.....	Diarrhœa.....	156	3	456	13	5 ·122	2 ·850
	Dysenteria acuta et chronica..	101	9				
	Colica.....	93	0				
	Obstipatio.....	10	0				
	Dyspepsia.....	63	1				
	Splenitis.....	6	0				
	Gastritis.....	3	0				
	Hœmorrhois...	20	0				
	Hepatitis.....	4	0				
Diseases of the lungs.	Catarrhus.....	54	2	98	13	1 ·100	13 ·265
	Asthma.....	27	0				
	Phthisis pulmonalis.....	2	2				
	Pneumonia.....	9	5				
	Hydrothorax....	2	2				
	Dyspnœa... ...	4	2				
Diseases of the brain.	Apoplexia.....	2	2	52	6	0 ·584	11 ·538
	Epilepsia.....	8	1				
	Paralysis.....	17	1				
	Mania.....	23	1				
	Tetanus.....	1	1				
	Delirium Tremens.....	1	0				
Eruptive fevers.....	Variola.....	2	0	58	1	0 ·651	1 ·724
	Varicella.....	40	0				
	Rubeola.....	13	1				
	Erysipelas.....	3	0				
Dropsies....	Anasarca.....	51	6	52	6	0 ·584	11 ·538
	Ascites.....	1	0				
Rheumatic affections.	Rheumatacutus et chronicus..	374	5	374	5	4 ·201	1 ·336
Venereal affections..	Syphilis primitiva.....	47	0	163	1	1 ·831	0 ·613
	„ consecutiva..	42	0				
	Gonorrhœa....	31	0				
	Hernia humoralis.....	41	1				
	Strictura urethræ.....	2	0				
Specific diseases.....	Lepra.....	6	0	65	2	0 ·730	0 ·076
	Elephantiasis...	3	0				
	Dracunculus....	22	0				
	Atrophia.....	28	2				
	Scrophula.....	6	0				
	Morbi oculorum	43	0	43	0	0 ·483	0 ·000
	„ Cutis.....	603	0	603	0	6 ·773	0 ·000
	Other diseases..	1535	2	*1535	2	17 ·243	0 ·130
	Total.....	5131	72	5131	72	57 ·638	1 ·403

Per centage of deaths to strength 0.808.

* Of this number were Phlogosis 490, Ulcus 286 and 1 death.

JAIL OF MERKARA.

Table exhibiting the number of Admissions and Deaths of the convicted prisoners, from each class of disease, from 1836 *to* 1843 *inclusive.*

Aggregate strength. 446. CLASSES.	DISEASES.	Admitted.	Died.	Total admissions from each class.	Total deaths from each class.	Per centage of sick to strength	Per centage of deaths to sick.
Fevers	Febris ephemera	59	1	445	9	99 ·775	2 ·022
	„ int. quot.	380	6				
	„ remittens.	1	0				
	„ com : cont.	5	2				
	Cholera	4	2	4	2	0 ·896	50 ·000
Diseases of the abdominal viscera	Diarrhœa	63	3	197	8	44 ·170	4 ·060
	Dysenteria	64	3				
	Colica	49	0				
	Dyspepsia	16	0				
	Icterus	1	1				
	Hœmorrhois	1	0				
	Splenitis	2	1				
	Hepatitis	1	0				
Diseases of the lungs	Cynanche	5	0	51	4	11 ·434	7 ·843
	Catarrhus	31	1				
	Asthma	13	2				
	Pneumonia	2	1				
Diseases of the brain.	Cephalalgia	5	0	11	2	2 ·466	18 ·181
	Epilepsia	6	2				
Eruptive fevers	Variola	0	0	8	0	1 ·748	0 ·000
	Varicella	8	0				
	Rheumatismus	65	2	65	2	14 ·573	3 ·076
Dropsies	Anasarca	2	2	3	3	0 ·672	100 ·000
	Ascites	1	1				
Venereal affections	Syphilis	2	0	4	0	0 ·896	0 ·000
	Gonorrhœa	1	0				
	Hernia	1	0				
Specific diseases	Lepra	1	1	2	2	0 ·448	100 ·000
	Atrophia	1	1				
	Morbi oculorum	11	0	11	0	2 ·466	0 ·000
	„ cutis	47	0	47	0	10 ·538	0 ·000
	Other diseases	265	0	*265	0	59 ·417	0 ·000
	Total	1113	32	1118	32	249 ·551	2 ·875

Per centage of deaths to strength 7·174.

* Of this number were Phlogosis 77, ulcers 128.

FRAZERPETT.

General description. Frazerpett having been occupied for a considerable time, by a large detachment of sappers and miners employed in making the great road to Merkara, a few words respecting it may be considered interesting. It occupies nearly the site of a fort commenced by Tippoo Sultan, called Jafferabad, or Khooshat-nuggur, which however was never finished, and is now in ruins ; situated on the left bank of the Cauvery, in a bend formed by a sudden turn of the river, opposite the Mysore frontier, and 19 miles east by north from Merkara, its elevation being about 1300 feet above the sea.

Soil. The soil is alluvial, but is well drained; it is surrounded by jungle, not however very dense.

From its position the climate is hotter than that of Merkara, but during the monsoon it is extremely pleasant, as very little rain falls there, and the heat of the sun is moderated by constant clouds, and light fogs.

Climate. The nights are cool and pleasant, nor is the sun ever very oppressive at any season, except for an hour or two at mid-day; and notwithstanding its being surrounded by jungle, it is decidedly a very healthy spot. The disease of the detachment have been few in number, chiefly slight fever, and bowel complaints, and attended with but a very trifling mortality.

METEOROLOGICAL REGISTER.

The instruments with which the subjoined observations were made, were placed in a detached building, over the inner gate of the fort, perfectly isolated, and open to atmospheric influences on every side. The roof is covered with a thick thatch, and the sides venetianed ; the interior is four and half feet square; the instruments being suspended on a frame in the centre, three and a half feet from the ground.

The barometer was made by Newman ; and of the thermometers, one was made by Jones, one by Robinson, and a third by Dolland, all agreeing exactly in their indications. The pluviometer (Howards) is kept on the outside of the same platform.

Monthly Abstract of the daily atmospherical Register kept at

Months.	Mean temperature Thermometer. Fahrenheit.		Mean pressure Barometer corrected to 32°. Fahrenheit.		Mean of hygrometer at 10 A. M.					Total rain—inches.	Mean evaporation in 24 hours.	Prevailing winds.
	6 A. M.	10 A. M.	10 A. M.	5 P. M.	Wet Bulb.	Difference.	Quantity of moisture.	Dryness.	Dew point.			
1835.												
June.....	66.7	69.9	———	———	———	———	———	———	———	44.77	20	W. N. W.
July.....	65.4	67.7	26.000	25.970	18.5	1.28	223.1	28.4	17.2	20.80	039	W. N. W.
August.....	65	68	26.007	25.980	18.6	1.	220.	24	17.4	23.25	030	W. N. W.
September..	64	68	26.050	26.010	18.3	1.8	210.	40	17.	13.53	030	W. N. W. E. N. E. N. N. E.
October.....	65	68	26.070	26.020	18.8	2	220.	40	16.5	10.24	035	W. S. W. E. N. E.
November...	63	67	26.115	26.080	17.7	2.8	200.	60	14.5	2.18	045	E. N. E. N. N. E.
December...	56	64	26.140	26.100	13.3	3.4	140.	75	8.9	———	———	N. E.
1836.												
January.....	53	64	26.160	26.100	11.	4.1	100.	120	2.2	———	———	N. N. E.
February....	56	69	26.172	26.135	12.5	7.	115.	160	2.	———	100	E. N. E.
March.....	61	73	26.140	26.070	13.4	8.5	130.	154	1.1	02	105	N.E.N.W.
April.....	64	75	26.103	26.056	18.3	5.2	210.	134	13.	187	057	W. N. W.
May.....	64	72	26.090	26.040	19.2	3.2	212.	64	16.	248	052	N. N. W.
Gen. means.	61.9	68.	26.97	26.051	16.3	3.6	188.	81.	11.4		052	

Total of rain 119.14

Merkara, from 1*st June* 1835, *to* 31*st May* 1836.

General Remarks.
The monsoon set in on the 31st May, but was not violent till towards the end of the month. The mornings were damp and foggy, heavy showers occurring in the evening. The last six days the rain fell in torrents.
The monsoon continued very mild during this month, with intervals of fair weather. The equability of the temperature (the daily range not exceeding 4°) is remarkable.
The early part of the month was foggy, with little rain, on the 11th the monsoon set in and continued with little intermission, till the end of the month.
The rain continued steady till towards the end of the month, when the wind changed to the east and the rain diminished. The period of the equinox was marked by heavy thunder storms.
The early part of the month was damp and foggy with occasional rain, about the 20th the wind settled on the N. E. quarter, and it became colder. Heavy rain from N. E. on the last few days.
The north-east monsoon gradually cleared off, and may be said to have terminated about the 17th with a heavy thunder storm; the weather then became cold and foggy with high winds.
The early part of the month continued foggy and damp, but afterwards cleared up, and became bright and fine, with very high winds, mornings and evenings very cold.
The weather throughout this month was bright and clear, mornings and evenings cold, heat of the sun tempered during the day by a constant cold wind from N. E., often amounting to a storm.
Much the same as last month, but rather hotter in the middle of the day, and less wind. The hygrometrical state of the atmosphere varied remarkably (dew point varying from 13,2 to 7. without evident cause.
First part of the month dry and warm, latter cloudy and close; a good deal of thunder. Dew point varied from 16.8 to × 17.
Occasionally dry and cool at Merkara; much rain fell all round, a few thunder storms.
A most delightful month, weather cool, clear and fine, much less rain than usual, a great deal of sheet lightning with but little thunder.

Monthly Abstract of the daily atmospherical register kept at

Months.	Mean of Thermometer. 6 A. M.	Mean of Thermometer. 10 A. M.	Mean of Barometer at 10 A. M. corrected.	Mean of hygrometer at 10 A. M. Wet Bulb.	Difference.	Quantity of moisture.	Dryness.	Dew point.	Total fall of rain	Prevailing winds.
1836.										
June.....	62	68	25.980	19.1	1.6	226.4	45	17.2	20.84	W. N. W.
July.....	62	64.2	26.025		Saturated.				23.74	W. N. W.
August.....	60	63	26.020		Do.				24.74	W. N. W.
September..	62	67	26.075	17.2	1.6	205.4	33	15.6	7.02	W. N. W.
October.....	63	68	26.125	16.1	6.1	149.4	129.6	8.7	0.55	W N. W.
November...	60	70	26.120	15	7.2	128.	151.	5.4	1.55	E. N. E.
December...	58	70	26.180	12.2	7.8	97.6	154.4	1.5	0.07	N. E.
1837.										
January.....	56	69	26.175	11.6	7.2	98.9	139.5	0.3	None	N. E.
Feberuary...	60	74	26.210	15	8.8	112.	188.4	2.5	None	E. N. E.
March.....	64	76	26.170	16.4	8 9	124.	197.	4.6	1.29	Variable.
April.....	65	78	26.130	18.2	9.3	139.	218.	7.2	0.21	Do.
May.....	63	72	26.070	20	4.1	211.	93.	16.2	7.64	W. N. W.
Gen. means.	61.25	69.91	26.106							

Total of rain 87.04.

Merkara from 1st June 1836, to 31st May 1837.

General Remarks.
The monsoon was later than usual on setting in, and can hardly be said to have begun till the 19th. The quantity of rain also did not amount to half the fall in the corresponding month of last year. For a considerable portion of the month, the air has been so saturated with moisture, as to afford no indication by the hygrometer. The troops continue (as usual at this season) very healthy.
The monsoon has continued without intermission during the month, and the weather has been most disagreeable, exercise being almost *totally* precluded. The troops are very healthy, out of 12 cases in hospital, 9 are accidents.
The monsoon has continued without intermission throughout the month, with almost constant rain or fog, and high winds, the air being intensely damp, and the sun scarcely ever visible. The troops continue extremely healthy.
The monsoon continued but with diminished violence, when the weather cleared up, and has since been fine and clear with occasional fogs, and thunder storms; the wind is drawing gradually round to the northward, and the nights are becoming cold, a few cases of rheumatism and fever among natives, have presented themselves, attended with determination to the head and chest; this is usual on all changes of the weather.
The weather during this month has been unusually fine dry and clear, with high cold winds from the N. E. so much so, as to occasion apprehensions of a deficiency of water for cultivation. The number of cases of slight fever, and rheumatism among natives, has also as usual in sudden changes of weather, considerably increased, but they are generally mild and yield to the usual simple remedies.
The N. E. monsoon may be said to have almost failed in this quarter. The weather during the month except a few casual showers, has been clear dry and cold. Fevers are becoming less frequent, and the troops are in general healthy.
The weather during the whole of this month, with the exception of two light showers, and occasional fogs, has been dry and clear, the mornings and evenings cold, with towards the latter part, storms of wind from E. and N. E., the troops continue very healthy, a few cases of rheumatism and fever of a slight description notwithstanding.
The weather during the past month has been uniformly clear cold and dry, with very high cold winds. The number of cases of fever has some what increased, with a tendency in some instances to congestion of the lungs.
The weather throughout this month has been intensely dry and latterly very warm, the season being more than six weeks earlier than usual. The scanty monsoon of last year now begins to be severely felt, causing drought all over the country. The troops continue healthy.
The weather during this month has been unusually close and hot, at least six weeks in advance of the two preceding seasons, water very scarce in many places; a considerable number of cases of fever with determination to the chest occurred after the showers, on the 5th and 6th, since which the troops have been as usual healthy.
This month has been warm and pleasant; but few showers have fallen, which is unusual at this season.
The early part of the month was warm and close, with a few heavy showers. The monsoon set in on the 25th (unusually early) with a heavy thunder storm, but as yet only a small quantity of rain has fallen, slight fever and bowel complaint, have been common among the followers and prisoners in the jail, but have not prevailed among the military.

REPORT

ON

THE MEDICAL TOPOGRAPHY AND STATISTICS

OF

NEILGHERRY HILLS.

COMPILED FROM THE RECORDS

OF THE

MEDICAL BOARD OFFICE.

PUBLISHED BY ORDER OF GOVERNMENT.

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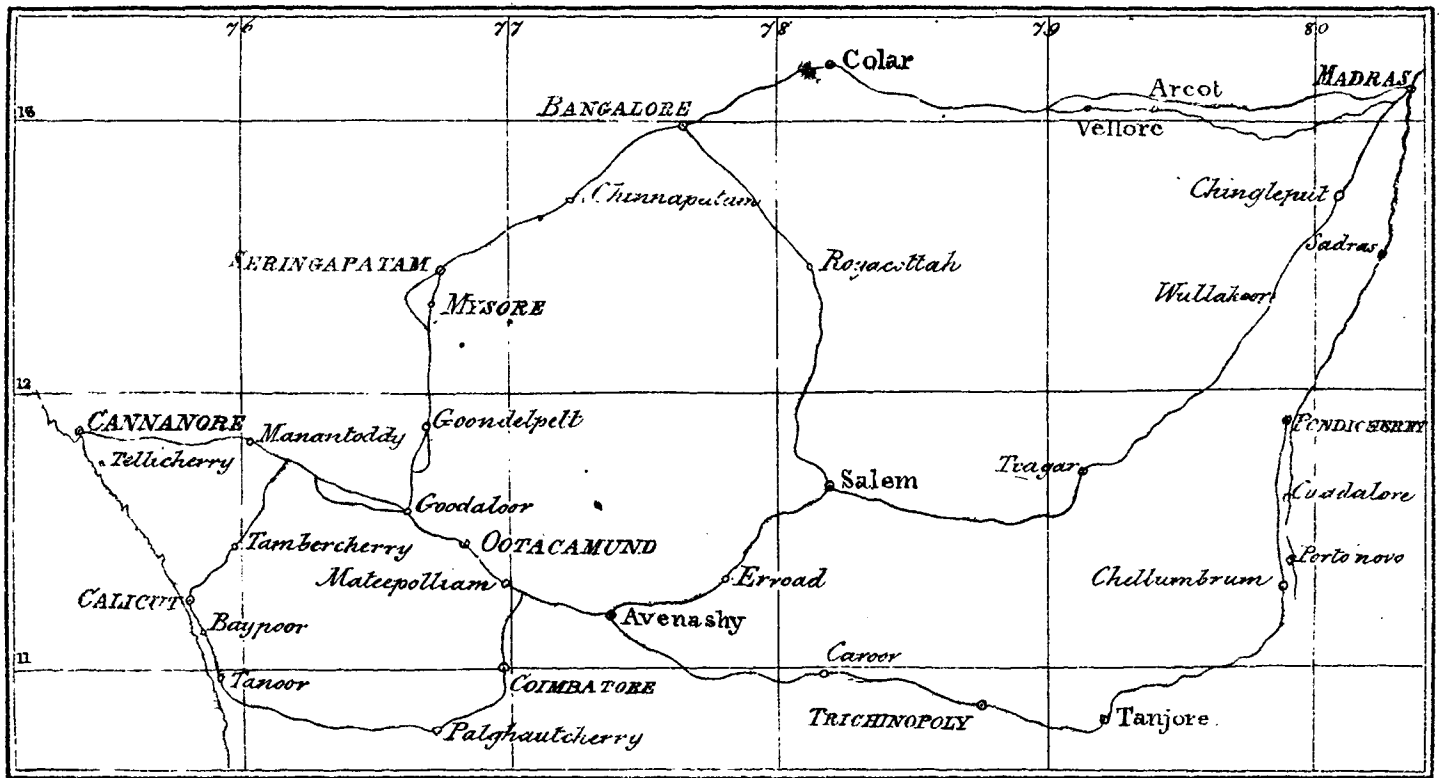

Madras Little Press — SKETCH of the PRINCIPAL ROADS leading to the NEELGHERRY HILLS. — B.C. Regel.

NEILGHERRY HILLS.

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DIRECTIONS TO THE BINDER.

Plan of the Hills and the various passes—to face the title page.

„ of the principal roads leading to the hills..... 1

NEILGHERRY HILLS.

General Description.

The delightful and salubrious region known under the name of the Neilgherry Hills, on which are situated the sanatarium of Ootacamund, first occupied in 1822, and the other stations, and various scattered residences of Europeans, may be described as an elevated table land rising abruptly from the low country; these hills are nearly altogether isolated from the neighbouring mountain chains, and comprise on their plateau, at an elevation of from 6,330, to 8,760 feet, quite an alpine region in miniature.

They are in extent about 50 miles in length, from the foot of the Coonoor ghaut on the east, to the bottom of the Koondah ghaut on the west; and in breadth 25 miles, from Seegoor on the north, to Soondaputty on the south.

The general form of the plateau is that of an irregular triangle, the longest side of which, the Bowany river running at its base, faces towards Coimbatore; the next side looks towards Malabar, and in the acute angle produced by these two sides, stretches out that portion of the mountain group, known under the name of the Koondahs; the third side of the triangle, looks towards Mysore, and has the Mayar river running at its base. This space is included between 76° 30″, and 70° 0″ E. long, and 11° 14″, and 11° 32″ N. Latitude. The length of what may be called the table land proper, the surface of which is much undulated, is about 30 miles, and its breadth varies from 8 to 16 miles. From the skirts of the plateau the descent is every where steep, sometimes precipitous, to the low country; and in many places so perpendicular are the sides of these hills, that a stone might be dropped into the plains, several thousand feet below. The following table of heights,* ascertained by barometrical measurement, by Major G. Underwood of the Engineers, from the foot of the Koondah ghaut, on the south-

* Taken from the Madras Journal of Literature and Science.

west, to Ootacamund, and thence down to the Seegoor ghaut, on the north, will afford a good idea of their elevation. From the bottom of the Koondah ghaut to Seegoor, through Ootacamund is 43 miles.

Table of heights above the level of the Sea.

Koondahs.	Sholay, bottom of the Koondah Ghaut	893	South westerly direction from Ootacamund.
	Bamboos begin	1757	
	Ladder Hill, bottom of	2972	
	Vullycand Camp, top of ridge	4140	
	Vullyaur river	4050	
	Murraypett bungalow	6742	
Avalanche range.	Avalanche ridge, top of,	7732	
	Avalanche bungalow, at bottom of ridge	6720	
	Ootacamund lake, level of	7361	
New Seegoor Ghaut.	Blink Bonnie, 4 miles from Ootacamund, top of New Seegoor ghaut	7204	North direction from Ootacamund.
	Sapperpoorum, 1 mile below	6758	
	Stonehenge, about 2 miles down	6182	
	Red Hill below Killhutty, Burgher village about 3 miles down	5940	
	Waterfall point, proposed site for travellers bungalow, about 4 miles down and 8 from Ootacamund	5538	
Commencing at the seven Cairn Hills.	Adam's peak, north end of large basin, about 4½ miles down	4982	
	Giant's glen, about 5 miles down	4296	
	Tent mydan, about 4 miles	4001	
	Bamboos cease here.		
	Large nullah bottom of ghaut	3408	
	Seegoor	3393	

The general configuration of the hills on the Neilgherry table land, is characteristic and peculiar. They are of various heights from one or two hundred feet, to upwards of 1,400 which is the elevation of the highest peak, that of Dodabet, above the level of the Ootacamund lake. They are universally of a rounded form and outline, rarely broken by asperities or projecting rocks, and are covered with a close thick turf. The base of one hill rises close to that of another, leaving but a small interval between, so that a true valley is very rare, and a level surface of any extent, almost unknown. It is difficult to find appropiate terms to convey an accurate description of these singularly smooth, rounded and undulating hills; they present truly a "surg-

ing scene" to use an expression of Coleridge, resembling the billows of the sea suddenly stilled, solidified and fixed, while in their full carreer of heaving commotion. This is more applicable to the lower hills, *mammillons* to use the expressive term of a French author, but many upwards of a thousand feet high, have the same rounded contour. The valleys or ravines at the foot of these hills, are uniformly wet, sometimes having a rivulet running through them, but more often being marshy, their being no exit to admit of drainage. From these moist places commence the beautiful clusters of wood, called sholahs, which form a peculiarly striking feature in the scenery.

They stretch along the clefts and gorges of the hills, extending on either side in a defined line, over the mountain slopes, and often leaving an interval of green sward, which conveys the idea of an artificial plantation, rather than the wild arrangement of unassisted nature. Sometimes these woods clothe the whole of a hill side, or of several neighbouring hills; frequently picturesque clumps of trees are to be seen, isolated, and having the singularly defined outline mentioned above; or they are continued along in the clefts, hollows and gorges, of the mountain side.

Scenery such as this must exhilarate the mind, and thus favorably affect the constitution of invalids.

Ghauts or approaches to the hills.

In a description of the hills an account of the approaches is essentially necessary, as the health both of the traveller and invalid, may suffer from ignorance thereof, miasm in its most deadly form, being produced in the thick jungles around their base; and as these must be traversed, the danger requires to be guarded against, lives having been lost, from delays, and from passing the night in feverish localites.

Seegoor ghaut.

There are several passes leading to the hills, only two of which are practicable for carts, viz: those of Seegoor and Coonoor—The Seegoor pass is the shortest and easiest of ascent—It commences at Goondelpett in Mysore, at a

distance of six miles from which place the road enters the jungle,—crosses the Mayar river at Tippicadoo, and ascends from the village of Seegoor by Kilhutty, for a distance of eight miles,—and from thence continues, nearly level for four miles, to Ootacamund.

A path way, at the foot of the pass on this line, proceeds due north for six miles, to the edge of a precipitous ravine, upwards of 900 feet in depth, and 2,000 feet wide, at the bottom of which flows the Mayar river; and ascending the opposite side of the ravine, it strikes into the great Mysore road at Goondelpett, making the total distance from Seegoor to Goondelpett by this route 18 miles,—instead of 33, by the great road through Tippicadoo. It is however impracticable for carriages, and from the nature of the ground could not be improved, except at a very great expense.

Coonoor ghaut. The Coonoor ghaut, at the south-east side of the hills, the second in importance, although considerably steeper than the Seegoor pass, is perfectly practicable for wheeled carriages, and is in excellent repair. It commences at Matepollium, and proceeds through five miles of jungle, to the beginning of the ascent, from whence to Coonoor, at the top of the pass, is ten miles, the rise being constant, and in many places very steep; from Coonoor to Ootacamund, a further distance of ten miles, the road is very good, and there is only one hill of any importance, about a mile and a half in length, close to Ootacamund.

Quitting Matepollium, a branch road ascends direct to Kotagherry, a distance of twelve miles—but it is exceedingly steep, and totally impracticable except for persons on foot or on horseback.

Canoot or Koondah ghaut, The third pass, is that ascending from Canoot at the south west angle of the hills, to Sisparah on the Koondahs, which communicates with the western coast by Arricode, the Beypore river offering the great advantage of water carriage to within fifteen miles of the base of the hills; unfortunately, from the great height of the Koondahs

the ascent is long and steep,—and from the quantity of rain which falls in the south-west monsoon, the road has been rendered impracticable nearly every year.

Goodalore ghaut. The fourth pass, which for many years was the principal road to the hills, ascends from Goodalore at the north-west angle, to Neddiwattam, a distance of only four miles; this road is wide and in good order, having been lately repaired; it is however so steep as to be utterly impracticable for carriages. It now forms the principal line of communication with Manantoddy and Cannanore, but is comparatively little made use of—A branch road, now totally disused likewise strikes off from Goodalore, through Karkannah, to Goondelpett.

The most eligible route is that from Matepollium to Coonoor—there being a good bungalow at each of these points—and the distance, only fifteen miles, being easily accomplished in a few hours. The great extent of the jungle between Goondelpett and the base of the hills, at Seegoor, a distance of upwards of 26 miles, and the danger of being detained in it, offers a decided objection to that line;—the same objection is also applicable, still more forcibly, to the Koondah pass, which is rarely traversed, except at the height of the dry season.

The following more detailed account of the passes to the Neilgherry hills, is extracted from a report to Government by the Board of Revenue in 1844.; which has been obligingly placed at the disposal of the Medical Board.

Seegoor ghaut. This pass, which was completed in the year 1838, leads in a direction nearly due north of Ootacamund, to the high road to Seringapatam, and Bangalore.

The only communication on the north side of the Neilgherries, prior to the construction of the Seegoor ghaut, was by Billikul, which runs at a short distance from it. This old pass was stated by Captain Underwood to be almost impassable. "At the best of seasons," that Officer says, "to surmount it alone, is four hours hard work for a cooly, the road "being cut in zigzags from top to bottom, up the steep face

" of a rocky stony mountain. After a heavy shower of rain, " the soil is so slippery, that it is really dangerous for foot " passengers to ascend, and loaded bullocks have been " detained in the jungle below for days together." Bad as it was, it was however much frequented by traders from the Mysore country, on account of the great circuit required to arrive at any other pass, and hence to facilitate the communication on this side, appeared an object of much importance, and the Seegoor ghaut was accordingly undertaken.

The total length of the ghaut, from Ootacamund to Seegoor, is eleven miles, the first three of which are properly on the summit of the mountain, and the last one and a half, on the low country—About half of the entire distance is upon ground nearly level, or with a very moderate inclination. The maximum rise is one foot in eight, and this only for short distances, to obtain perhaps a better level, or to avoid a difficulty. The greater part is one in ten, or fifteen. Moreover it must be remarked, that occasionally the road passes over a level, which is a great relief to men and animals. The slopes of the mountains on which the road is cut, are generally moderate, and the soil easy; advantages which saved much labour and expense at the first, and will diminish the cost of all future repairs.

This communication proceeds from Seegoor to Shembanuttum, and from thence, in a direction nearly west, to Tippicadoo, distant ten and a half miles from Seegoor, where the Pycarry or Mayar river is crossed by a wooden bridge, erected in 1841. The road here again turns to the northward, and passing through a belt of dense jungle, joins the old road from Goodalore to Goondelpett, near that place, and proceeds thence to Seringapatam, and so on to Bangalore.

Top of the Seegoor ghaut, from Ootacamund 4¾ miles..	Chuttrum.
Killhutty	Bungalow and
3 miles 5 fur. lower down ..	Chuttrum.
Foot of the ghaut, 4 miles 1 fur. lower down	Chuttrum.
Tippacadoo ..... 10 miles 5 fur. 110 yds., lower down	Chuttrum.
Total 23 miles 1½ fur.	

The ghaut is well provided with places of accommodation, both for European and native travellers. It is traversed with facility by wheeled carriages, and as no urgent reasons exist,

for halting in the unhealthy jungle near Tippicadoo, and at Seegoor, it may be safely pronounced the most useful communication with the Neilgherries. The distance from Madras by this route is thirty-four miles longer than by Salem, but the climate of Mysore, and the facilities for travelling in that country, are so much superior, that it is now generally preferred.

Road across the Mayar ravine.

At Shembanuttum, the road from Seegoor towards Goondelpett, turns suddenly to the westward, and crosses the Mayar river at Tippicadoo. East of that spot the valley of the Mayar breaks into a vast chasm, a thousand feet in depth, which was a great objection,—on account of the expense chiefly,—to continuing the road in a straight direction across it.

Subsequently however, in consideration of the danger to travellers from fever, and from wild elephants, in the jungle near Tippicadoo, as well as of the increase of distance, assumed at nine miles, by that route, it was resolved to open a new road across the ravine.*

Coonoor ghaut.

This communication stands next in importance to that of Seegoor, and was established several years earlier, the work being performed by the corps of pioneers.

Its situation is on the south-east side of the hills, where it forms the communication with Coimbatore and Trichinopoly, and also the principal one with Malabar,—being especially used by travellers from the Bombay presidency—and it is the shortest route to Madras, by Salem and Ahtoor.

The original alignment of this ghaut was faulty, although the situation is in some respects favourable, and the average inclination from top to bottom, only one foot in 12½, so much of this advantage was lost in the higher parts, which are exceedingly steep, being sometimes as much as one in five, that lower down there are level places, and even counter dips, which increase the distance, without forming a

* This work has not yet been completed.

necessary part of the communication. Owing to the great steepness, this ghaut has never been practicable to loaded bandies, but of late, its surface having been restored, it has been occasionally traversed by carts with light weights.

At three miles from the foot of the ghaut, runs the Bowany river, over which a bridge was built in 1840, and forms a most useful communication,—besides which there is a wooden bridge on masonry piers, over the Cullar, a tributary of this river, running between it and the foot of the ghaut. Near the former, is the village of Matepollium, from whence diverge the roads to Coimbatore and Trichinopoly—the former is in very good, and the latter in tolerable order.

The Trichinopoly route, was greatly improved in 1839, by the construction of a bridge over the Noyel river, and another bridge was about the same time built over a large jungle stream, between Matepollium and Annoor, the next stage.

This communication was once much used by travellers from Madras, but since the opening of the Seegoor ghaut, has been less frequented.

There is little or no jungle at the foot of the ghaut, and it has never been found feverish. Up to the year 1841, there were no places of accommodation between Coonoor and Matepolliam, a distance of fourteen miles. In that year a chuttrum was built at the Burliar stream, six miles from the summit, and affords a convenient resting place.—At Coonoor, there is a travellers bungalow, and a chuttrum.

Kotagherry and Dimhutty ghaut.

From the bridge over the Bowany, above mentioned, a road to the right of the one to Coonoor, leads to the pass of Dimhutty and Kotagherry; this is very steep and impracticable, but its difficulties were in some measure lessened, in the year 1837. It is still however much complained of, by the native merchants resorting to Kotagherry.

Road from Coonoor to Ootacamund.

The road from Coonoor is properly a continuation of the Coonoor ghaut, and was also originally constructed by the pioneers, but is treated of here as a separate subject, because it lies altogether on the summit of the hills, and has recently been the scene of extensive operations, for the improvement of its manifold defects.

The rise from Coonoor to Ootacamund, is 1,600 feet, and the distance ten miles, so that were it not for the intervention of several ridges, there would be no difficulty upon this line. The Koty-ridge, near Ootacamund, however, alone constitutes a most formidable obstacle. It cannot be turned, and its steep and rocky face renders the formation of an easy road across it, a work perfectly hopeless, without a disproportionate expense.

Koondah ghaut.

The Koondah ghaut, the next in order, forms the communication with Calicut, to the south-west of the Neilgherries.

The first operations carried on here, were in 1832, by the corps of pioneers, assisted by hired coolies: they were suspended in consequence of the rains, and the work left imperfect. At the latter end of 1835, it was again resumed, and finished in 1838.

There are three bungalows upon this line, at Cheecheparah or Sisparah, Marakullum and Edamunnah, besides the Avalanche between the ghaut and Ootacamund. The Sisparah bungalow, at the top of the ghaut, was built of wood, there being no facilities for building with masonry in that situation. It is to be regretted that it does not afford comfortable accommodation, and that the choultries constructed at five places along the route, are also considered quite unfit for so severe a climate as that of the Koondahs.

The length of the ghaut is twelve miles, from Goolical to Chalacal, and the average inclination is estimated as high as one foot in nine, while it is often actually much in excess of

this, through the loss of distance in level places, as in the Coonoor ghaut. The natural difficulties of the ground are very great, and it is supposed that what appears faulty in the alignment, is to be attributed to the impossibility of obtaining a more uniform slope, without a great increase of distance and expense, The "ladder hill," near the middle of the pass, constitutes the principal obstacle, which is surmounted by steep zigzags, at very acute angles, rendering the road alike difficult to every description of transit, and almost impossible to be kept in repair. It is quite impracticable for wheeled carriages, and every idea of making a carriage road in this situation, if ever entertained, is now abandoned.

The road from the top of the ghaut to Ootacamund, thirty miles long, is also difficult, and passes over a bleak country, where the severity of the weather has sometimes proved fatal to native travellers.

The jungle at the foot of the ghaut is about six miles in breadth, which is considerably less than at any of the parallel communications, but notwithstanding this advantage, the route has been very little used by natives, and Europeans are often prevented from following it, by the unwillingness of the coolies to encounter the severity of the climate, with wretched places of shelter.

Goodalore and Carcoor ghauts.

These passes are situated to the north west of the Neilgherries. The Goodalore pass leads from the hills, into the Bala-ghaut of Malabar, and the Mysore; but the Carcoor continues the communication with the coast, in a south-westerly direction.

Little has been done for the improvement of these passes, which are ancient native communications, still in constant use.

The Goodalore ghaut is very steep, but practicable for the ordinary traffic of the country, and although a line has been lately opened, from Sultan's battery to Tippicadoo, in order

to enable traders from the direction of Manantoddy, to make use of the Seegoor ghaut, the saving of distance by the old line of Goodalore, has been a sufficient inducement to them, to follow it in preference. The route by Goodalore, Manantoddy, and the Paria ghaut, to Cannanore was formerly much used by Bombay travellers, who now generally prefer the one by Paulghautcherry and Coonoor.

Soondaputty or Keeloor ghaut.

The Soondaputty or Keeloor ghaut, is situated to the south-east of the Neilgherries, forming part of a communication with Malabar by Manār, where there is another ghaut to be crossed, in order to reach the low country.

It does not appear that it has been explored by the officers of this Government, but the road from the foot of Keeloor, along the valley of the Bowany, and across the Manār ghaut, is deserving of particular attention, not only as a means of communication with the Neilgherries, but more particularly as being a shorter route by thirty miles, than that by Paulghaut, from Coimbatore and Malabar.

A better line it is supposed might be laid out to the northward, without much expense. The road above this ghaut, to Soondaputty is described as naturally good, and bordered all the way with houses and cultivation; it has been used from time immemorial, and there is nothing but the difficulty of the Manar ghaut to deter traders and travellers.

The Soondaputty ghaut is already much used, and the annual number of bullocks which pass through it, is 2,500,and it is expected would be greatly increased, were some of the principal obstacles removed.

Tullapoya ghaut.

The Tullapoya ghaut lies to the west of Soondaputty, and nearly south of Ootacamund, with which it is connected by Munjenaud, and Mail Koondah, and with Manar, by Uttapady, and Chunagum.

Little is known of this pass, except that its line of com-

munication is with the most cultivated and populous parts of the Neilgherries, and that it is used only by the Buddaghurs.

The only roads remaining to be noticed, are the minor ones on the summit of the hills. These are all bridle paths, but serve sufficiently well for the purposes of communication. The roads about the cantonment of Ootacamund, have been lately much improved, and carriages are frequently used upon them.

Geology and constitution of the soil.

Attention has lately been much directed to the production of diseases from terrestrial exhalations, dependent on the nature either of the rocks, or soil; should these be proved sources of morbific influences, the student of medicine must hereafter pay more attention, to the subjects of mineralogy and geology, than has hitherto been bestowed upon them.

The foundation rocks of the entire Neilgherry plateau, are of the primitive kind, and comprise the following varieties:—

1st.—Granite, sometimes composed of the three minerals, *mica*, *felspar* and *quartz*, but very extensively in the form of a binary compound called *pegmatite*, consisting of the two latter minerals only; hornblende, also, frequently enters into the composition of the granite, sienite giving a great variety to the appearance of the rock, and garnets are found in vast abundance, generally amorphous, but sometimes granular. The true granite consisting of mica, quartz and felspar, almost always forms the most elevated peaks:—

2d.—Hornblende rock, or primitive *greenstone*, composed principally of hornblende, mixed in a great variety of proportions, with felspar, quartz and garnets:—

3d.—Quartz in very considerable veins in the granitic rocks:—

4th.—Felspar in large veins:—

5th.—Basalt in vast dykes and veins:—

6th.—Magnetic iron ore, mixed largely with quartz :—

7th.—Hamatitic iron ore; both these ores are found in vast beds, in the granitic and hornblende rocks :—

8th.—Titaniferous iron ore, in moderate quantities :—

9th.—Umber, in small quantities :—

10th.—Manganese, in small quantity :—

11th.—Hornblende slate, in low situations in the valleys, and on the flanks of the plateau :—

12th.—Gneiss, containing hornblende, also on the flanks of the plateau.

The composition of these rocks would indicate the existence of a rugged contour, the spiry peaks and precipitous facade of granitic mountains; but these forms obtain in a very slight degree, for the rounded, undulating character of the hills, resembles more the forms assumed by calcarious formations, and depend upon a peculiar mode of decomposition of the rocks, which together with the soils resulting therefrom, may be thus explained.

The most common surface soil over the whole plateau, is a fine vegetable mould, from 2 to 3 feet, or more in thickness, of a brown colour, and crumbling easily.

Frequently a black soil is observed uppermost, especially in the valleys; when moist, it is of an intensely black colour, resembling soot in appearance; but when dry, it more approaches a brown colour, and is friable; it sometimes under-lies the vegetable soil, but is never seen above it, and it is not confined to the low grounds, but is found on the slopes of the highest hills, many feet in thickness. In one of the cuts for the new line on the Coonoor road, through the ridge overlooking Kaitee valley on the Ootacamund side,—is a section showing a layer of black soil, resting at a highly inclined angle, of 11 feet in thickness. This spot is several

hundred feet above the level of the Ootacamund lake. In appearance it strongly assimilates to the regur, or cotton soil, of the plains of India; but in chemical composition the two differ widely, and their origin must also be different. The black soil appears to be of vegetable origin, and its position, on the slopes of the hills, is a geological anomaly.

Lying under the vegetable mould, or the black soil, is seen a layer of gravel from a few inches to several feet in thickness, the debris of the subjacent rock. The fragments of which this gravel is composed, are small in size, and for the most part angular in shape, evincing that they have not been transported far from the spot whence they were derived.

In the very numerous sections for the roads around Ootacamund, and in the other places where similar sections afford opportunities of observation, this layer of gravel is invariably seen, forming a meandering line, in the situation above noted, and following all the undulations of the foundation rock. Upon examination it is found, that the pebbles of which it is composed, are of the same composition as the rock on which it is incumbent. One singular anomaly however is, that while the subjacent rock is decomposed, as will be hereafter seen, to a depth of many feet, the detritus retains more or less of its original hard structure.

This is not the place for the discussion of geological theories, but it may be observed, that this arrangement of the superficial strata, would seem to have taken place anterior to the elevation of the mountains, to their present height. It does not seem probable that the detritus could have accumulated, and been covered in by the vegetable or black soil, on the precipitous sides of the hills, as they now stand; but it is more likely that these upper strata, existed when the present table land of the Neilgherries, was at a much lower level. From the precipitous and abrupt manner in which the sides of the plateau descend to the plains of Mysore, and Coimbatore, it would appear as if the general upheaving force had been exerted upon the whole region, elevating it at once,

to its present altitude *en masse*, and disturbing the surface of the upraised area, only so far as to produce the undulating inequalities observed on the now existing plateau, and thus originating the otherwise unaccountable position of the superficial soils, and subjacent debris; here and there only the erupted rocks bursting through the generally smooth outline, and presenting few projecting masses, and fewer scarped and mural precipices, such as are usually seen in granitic tracts. Underneath these strata, lies the foundation rock, which is almost always in a singular state of decomposition. The hornblende rock decomposes into a red or yellow lithomargic earth, of a variety of shades; the pegmatite into porcelain earth, in which the felspar softens into a pure white clay, and the quartz disintegrates only; the felspar veins again decompose into unmixed Kaolin. The iron ores, too, decompose in situ, forming a substance resembling what in the low countries is called laterite or iron clay, and a kind of conglomerate results, from the agglutination of the detritus of this rock.

The lithomargic earth is clearly the result of the decomposition of the hornblende rock, for the process can be most distinctly traced in various places; the different minerals of which the rock is composed, being each visible in their separate modes of decay, the hornblende and garnets, by the hyperoxidation of their ferruginous constituents, giving the prevailing tints to the mass. It is impossible to say how deep into the mountain this decomposition is going on, for in the deepest sections that have been made, the process is still observed. In the new line lately formed on the Coonoor road, there is a magnificent cut through the whole thickness of a hill, between Kaitee and the valley, in which is located the pioneer camp, and here the process may be admirably observed. The section is 78 feet deep, and the lofty wall on either side, is entirely composed of the red lithomargic earth. In the centre of the road, while it was yet (1842,) in progress of formation, stood a huge globular mass in its original site, a ton or more in weight, the still undecomposed nucleus of a vast sphere, and here the rock might be observ-

ed in every stage of decay. In the centre was seen the highly crystalline hornblende rock, and towards the circumference, the gradual changes were observable, the stone at first acquiring a pale dusky brown colour, and gradually changing, till it ended in the soft lithomarge.

It is evident, then that this decomposition is still going on to an indefinite extent, into the very centre of the mountain; it is evidently quite independent of atmospheric influences; and indeed when the rock is exposed to the air, as it often is, in projecting masses of various size, it is hard and not much altered in structure.* It takes place, too, with some relation to the original crystalline structure of the mountain masses, which peel off in concentric lamellæ, leaving a central nucleus, which, when detached from the mass to which it belonged, appears like a bolder, and might be easily mistaken—as indeed they often appear to be in low lands—for fragments that have been rolled from a great distance. The road sections present numbers of these spheroids, and show the mode of decomposition described.

It is partly owing, no doubt, to this mode of decomposition that the hills acquire their rounded form, for whole mountain masses have the same spheroidal crystallization, and nothing is more common than to see the undecomposed rock, the pegmatite more particularly, splitting into fragments, which at first sight appear tabular, yet on closer examination, are seen to be spherical; but, the circle of which, they are segments, is so vast, that their form is not at first sight perceived, the fragments appearing flat.

Thus the peculiar rounded form of these hills appears to be accounted for, by the progressive decomposition, on the large scale as above described, the rock itself becoming rounded off, and smoothed still further by atmospheric influences, when sufficiently exposed to them; the action of these agents however, being prevented from laying bare the

* It would seem to be a continuous chemical action, which once commenced, has a tendency to spread geocentrically.

undecomposed rock, by the thick layer of soil, bound together by a closely contiguous and luxuriant vegetation, protecting the lithomargic earth from disintegration, which would otherwise be carried off by torrents of rain.

The valleys are swampy, but emit no offensive exhalations, and present a highly luxuriant vegetation of marshy plants, the surface being so boggy as not to permit the passage of a man over it. In these places the water collects from the clefts and gorges of the surrounding hills, and drains sluggishly off, until it comes to a spot where the declivity admits of its flowing in a stream to the low country.

Springs and Streams. Where the ground is sufficiently inclined, streams of water of the purest quality are found and springs arise from every hill side; at Ootacamund they are led off by small artificial channels, to the different houses. The water is usually very pure, but sometimes contains iron in small proportions.

Lake. Advantage is taken of the streams which flow from Dodabet, and the ranges of hills to the north of Ootacamund, to form an artificial lake. For this purpose a dam has been thrown across a defile, among the hills to the south, and a very considerable body of water has been thus accumulated, which forms an ornamental, and pleasing addition to the landscape. It occupies the winding low land, hardly to be called a valley, around which are situated the houses forming the station of Ootacamund. This lake is about $3\frac{1}{2}$ miles long, and varies in breadth, from about 50 to 200 feet.

On the table land of the Neilgherries, there are properly speaking no rivers, but the streams which pour down on all sides, to form the *Bowany and Mayar*, which wash the base of the mountains, are very numerous. The *Pycara*, is however a considerable stream, and flows down the N. W. angle to join the Mayar; and the waters of the lake, and the mountain rills to the N. of Ootacamund, become a torrent, which rushes down the gorge, from Killhutty to Seegoor, forming the source of the *Mayar*.

Water falls. The waters never accumulate in a sufficient body to form cataracts of much magnitude or sublimity, but the falls at Kaytee and Killhutty are picturesque ; as are also those of the tributaries of the Bowany river in the Koondahs ; and there is a considerable fall or weir, in the Pycara river. .

Population. The number of inhabitants of the Neilgherry hills, is computed to amount to between 5 and 6000, who are divided into three principal classes viz. : *Toders*, *Buddagurs*, and *Kotars*. The former occupy almost exclusively the elevated western part of the hills, consisting of pasture land, and which bears their name. The two others dwell in distinct villages, in the eastern or lower range, known as the Buddagur country.

Toders. The toders a very remarkable race of men, are in stature above the general height. They are firm, erect, and muscular, have a brown complexion, and a cast of feature said to resemble that of the jew. Their hair is short and curled, and their beards bushy ; their features are so regular, that in an entire village, scarcely a man can be found who might not be called handsome. They wear no turbands, and their only clothing consists of a piece of coarse cloth, thrown over one shoulder, and folded on the body after the fashion of the highland plaid. The men however, cover their heads when in mourning. The toder women have long hair, which is parted in the middle, and allowed to flow in ringlets over the shoulders. They wear the same description of clothing as the men, differing in this respect, from all other native women. Both sexes are very uncleanly in their persons, and like some of the castes in the Malabar provinces, never change a cloth when once put on, but wear it till it drops off piecemeal. The toders are represented as being frank in their disposition, and possessing an independence of character, such as often distinguishes mountaineers. They are remarkable for a great flow of spirits, are fond of music, and soon become attached to the European residents. These people are hindoos, and are considered to be the earliest

inhabitants of the hills. They are a pastoral race, occupied solely in tending herds of buffaloes, and migrate from place to place, according to the state of the pasturage, and the season of the year; they entirely neglect cultivation. The violence of the south west monsoon, is avoided, by moving to the eastern verge of the todier-naad or todar land, and the north east, by shifting again to the western side. Their villages are formed of a collection of small huts, which from front to rear, are similar in shape to the arched roof of a waggon, without any opening but the entrance, the ends being closed with wood. The door is low and very small, and the roof and sides, are constructed of wattle and thatch. They live chiefly on the produce of their cattle, and use milk in their culinary processes, in place of water. The little grain made use of by them is procured from the Buddagurs and some accounts say, that it is received in the way of tribute, for permission to occupy and cultivate the hills; or that it is exacted under the influence of a superstitious idea of their being necromancers, a notion stated by Buchannan to be prevalent among the inhabitants of the low country, with respect to all the natives of the hills.

The toders have been suspected of female infanticide, which opinion seems to derive some support, from the small proportion of adult women to be seen, and from the custom amongst them, of all the brothers of a family, living promiscuously with the same wife. This practice is not however peculiar to them, but is common in some tribes in Malabar, as noticed in a former report. Some of these people are said to have acknowledged the practice of infanticide, but as it is also said, that amongst the children of the present time, there is no disparity of sexes, it may be supposed that it does not now exist. It is scarcely credible that such a custom can prevail, except by supposing, that infants are destroyed immediately after birth.

The toders are a very healthy race of people, and have no knowledge of medicine. They speak a corrupt dialect of the Canarese, which is common to all the inhabitants of the hills, but each caste has also its peculiar dialect; their numbers

have been estimated at about 264 males, and 163 females; forming a total of 427.

Buddagurs. The various tribes of buddagurs, who are called by some writers *bergers*, are also hindoos, and are the principal agriculturists. They inhabit the lower, or eastern range of the hills, and constitute the chief part of the population; their numbers being estimated at 2,455 males, and 2,453 females, total 4,908, and are subdivided as follows:

	Males.	Females.	Total.
Buddagurs.....	1992	1979	3971
„ Lingavunders...	163	186	349
„ Aroovers.....	92	104	196
„ Cunnakers.....	90	87	177
„ Toriers.....	89	85	174
„ Buders.....	9	12	21

There are some buddagur villages however, situated within the todier-naad. This race is somewhat superior in aspect to the natives of the plains; have rather a light complexion, and a little of the European contour of feature, particularly the Grecian nose, and are healthy in appearance, though wanting the physical strength, of the inhabitants of the other temperate climates.

They are said to have originally emigrated from Mysore, about 200 years ago, whence their name, vada-gar or buddagar, *vada* signifying north. Polygamy is permitted amongst them, yet they have seldom more than one wife. Their marriages are productive, and twelve or fourteen children, by one mother, is stated not to be very uncommon.

The food of the buddagurs consists chiefly of coarse grain, a scanty portion of milk and butter, and vegetables. They have no aversion to animal food, and eat the young male buffalo, but poverty places it generally beyond their reach. They mix their flour with water, in which state they generally eat it, without any further culinary process. The women and children are even worse fed, having often only the bran, or refuse of the grain.

They plough the land repeatedly, and manure it before sowing the seed; and obtain two crops in the year. Their impliments of husbandry do not differ from those in use on the plains. The plough is followed by the women, who with a stick, and mallet break the clods; and to them also is intrusted the charge of weeding and reaping the grain.

This tribe possesses herds of bullocks and buffaloes, and use oxen in ploughing; the cattle are always milked by the men, the women not being allowed to approach them, nor are they ever employed in that occupation. They are said to be addicted to the use of opium. The men wear the same kind of coarse wrapper as the toders, but have in addition, a handkerchief or turband on the head. The women also use the wrapper, which is drawn into folds, tight round the body, and fastened by a girdle or string, under the arms; these people are quite as uncleanly as the toders, and like them never change their dress. They live in small villages, seldom containing more than 20 houses, distinct from the other tribes, and pay a tribute of grain to the toders. Their huts do not differ materially in construction, from those in the low country.

Kotars. The kotars are a dark, and in appearance, a miserable race of people, by far the worst looking on the hills, and are compared to the chucklers, and other low castes, of the plains. They inhabit the same country as the buddagurs, but live in separate hamlets. They are an industrious people, cultivate the soil, work as labourers or coolies, and are the artizans, and musicians of the hills; and being necessary to the toders, on account of their skill in handicraft, kotar villages are to be found throughout the toder country. The kotar villages are larger than any of the others, containing in some instances 40 or 50 huts, sometimes laid out with regularity. The habits, and dress, of these people, are much the same as those of the buddagurs, excepting that they do not wear a turband, or any covering on the head. They are the only race that eat the flesh of

animals, who die a natural death. Like the buddagurs they are tributary to the toders.

Other tribes. There are some other tribes or castes, as the *mullacombers*, who profess priest-craft, and whose numbers are very limited; and the *irralars*, called also *mudimars*, and *cossiewars*, the proportion of whom has not been estimated. These tribes are thinly scattered on the acclivity, or wooded region of the hills. They cultivate the plantain, and castor oil plant, with some of the smaller grains; and also collect bulbous roots, honey, wax and drugs, and catch wild animals. The irralars hold the most frequent communication with the natives of the plains, and seldom ascend the higher hills.

Inhabitants generally. The inhabitants generally, are said to be remarkable for sobriety, and frequently attain a very advanced age.

The prevailing language is a corrupt dialect of the Canarese, but the people are quite illiterate. With the exception of the toders, who are frank and generous in their disposition, the others are represented as being extremely servile, cunning and penurious. They are however, acknowledged to be poor, and destitute of all the ordinary comforts of life.

The age of puberty is stated to be the fourteenth year in males, and the thirteenth in females. The women are usually very prolific, and cease childbearing at about the age of 40 years.

From the effect of hard labour, and of a diet inferior to that of the men, females become prematurely aged in appearance. From the use also of poor and innutritious food, it is supposed that a considerable mortality takes place amongst the children, especially in the earlier years of infancy. They are represented as having in general small limbs, with a prominent belly, and other marks of impaired constitutions. These observations however, do not apply to the toders, whose manners and customs place their women and children in a more favorable situation.

There are no regular priests amongst the inhabitants of the hills, or places of worship. Their religious observances are hence but few, and for these it would seem, that any convenient building can be appropriated. The toders have anchorites, or holy men, who retire to secluded spots, live naked and in solitude; they have certain duties to perform, and enjoy some privileges. The natives occasionally resort to particular hills, set apart for sacred purposes, especially that called Rungatsawmy, in the north east angle, to offer their devotions. In their marriage rites, they appear to follow in most particulars, the customs of some one or other of the tribes in Malabar. Those relating to the sepulture of their dead, are said to be curious. Buffaloes are sometimes driven round and round the deceased, accompanied with the discordant music of the kotars, until the animals become quite exhausted; and till lately they were driven astray in the woods, when they were usually killed and eaten by the kotars. Some accounts however imply, that the toders themselves kill buffaloes on these occasions, and after cutting off the horns, dispose of the carcasses in a clandestine manner, giving rise to the supposition that they are eaten by themselves.

Circular heaps of stones, or cairns, as they are called in Scotland, are met with on the summits of the hills, and in these when dug open, small coins and other articles have been found.

It is a prevalent notion, that the population of the hills, was in former times much greater than at present, though the causes of the reduction seem to be obscure, some referring it to war, others to disease, famine or oppression; their numbers have however increased considerably, since the hills have been resorted to by Europeans.

Dr. Buchanan, in the narrative of his tour through the southern parts of the peninsula, notices the Neilgherry hills, and describes them as "the hills west of Coimbatore," and says, they are inhabited by the *Malasir (Muleer ?)* the *Buddagers*, the *Erilagaru (Irralars ?)* and *Toders*. He notices

the prevalent belief amongst the people of the plains, that the inhabitants of the hills were sorcerers and magicians, and that their country was so unhealthy, that the low land people could not live there. The erilagaru women were said to charm tigers, so that they could leave their children to their care, when they moved abroad. Dr. Buchanan ascended the hill, or as he says, "took a long walk to the top," in order to see a *Cambay* or erilagaru village, from which it is certain he did not ascend as high as the table land of Jackanairy. He describes the village, as composed of seven or eight huts, made of bamboo wicker, and plastered with mud or clay, and says that the plough was in use with the toders; but that the Buddagurs only employed the hoe, the reverse of this however seems to be the case.

Climate. "* The prevailing winds on the Neilgherry hills, are those of the north-east and south-west monsoons. The former begins usually in October, and continues until March, when it shifts to the south or east, or is variable until June, when the south-west blows steadily. The north-east wind is usually ushered in with three weeks rain, when it is succeeded by clear cold weather, and frost at night; but in the day time, in the heat of the sun, the thermometer rises to 75° or 80° of Fahrenheit, and falls during the night sometimes to 28°. The coldness of the air, and its excessive dryness, which is often so great as to show no deposition by the hygrometer, withers most of the more delicate plants, such as grasses, willows and garden vegetables; but large trees do not appear to suffer; and some thrive, as the *Rhododendron*, which then puts forth its brilliant carnation flowers."

"During the south-west monsoon, which prevails from the begining of June until the begining of October, much rain falls, and the air is generally saturated with moisture, as indicated by the hygrometer; for, during the intervals of showers, a thick mist usually hangs over the hills, at which time the grass springs forth luxuriantly, and soon clothes them, to

* Extract from Dr. Birch's report, Madras Journal of Literature and Science, No. 20 of 1838.

their summits, with verdure. At the commencement of this monsoon, the wind blows very strong from the south-west, and sometimes amounts to a storm or hurricane, blowing down trees and blighting vegetation, as was the case in June, 1836."

A brief abstract of some of the principal points noticed by Mr. Dalmahoy in a paper on the meteorology of the hills, is here given, and according to that observer, the mean height of the barometer, at

	Inches.		Feet.
Dodabet..... is	22,242	the altitude being	8,429
Ootacamund.....	23,245	do.	7,197
Kotagherry.....	23,907	do.	6,407
Dimhutty.....	24,111	do.	6,166

The mean height of the barometer at the level of the sea, is 29.830. The mean annual range of the barometer at Kotagherry 0.245 and at Madras 0.360. The difference of atmospheric pressure on the superficies of the human body, between these two places is estimated to be equal to about three tons.

The mean temperature of Ootacamund has been estimated at 56° 4″, but Mr. Dalmahoy is disposed to consider this too low, and infers, as the result of various accurate observations, that the annual mean temperature is as follows, at

Dimhutty..... 64° 1,
Kotagherry..... 63° 4,
Ootacamund..... 60° 8,
Dodabet..... 56° 6,

The annual mean at the level of the sea, in the latitude of the Neilgherries, is estimated to be 82° 6″. and Mr. Goldingham has made it at Madras, 81° 7, at London 49° 5, and at Bangalore, at an elevation of 3000 feet, it has from late observations been ascertained to be 75°.

The ranges of temperature, and quantity of rain, are as follows, at

	Daily.	Monthly.	Annual.	Rain annually.
Ootacamund.....	8°7	17,4	38°	63.880
Madras.....	7°4	16,3	29°	49.275
London.....	13°5	29.3	64°3	22.199
Bangalore.....			19°	34.83

In the latitude of the Neilgherries, the line of perpetual freezing is 14,621 feet above the level of the sea, according to professor Leslie's formula, or about 6000 feet above the summit of Dodabet.

The humidity of the climate of the Neilgherries, or indeed of that of Madras, can only be estimated hypothetically. Some observations were however made by Mr. Dalmahoy at Kotagherry, and from these, and taking the dew point at 6°. below the mean temperature all over the world, he estimates, that supposing complete dampness to be 100°, the relative dampness is, of

London.....	91°.
Madras.....	82°.
Kotagherry.....	76° 5″.

Of the state of the weather on the Neilgherry hills, the following summary is given for one year,

Dry days.....	260
Partial rain.....	88
Continued rain.....	14
Unrecorded.....	3—365.
Calm.....	214
Light Winds.....	130
Strong do.	21—365.

Frost on 28 nights, partial fogs 10 days, and continued fog 1 day. Winds most prevalent, from the north, and west.

In the important point of climate the Neilgherries appear to be at least on a par with the most temperate parts of Europe. The subjoined table exhibits the comparative state

of the principal atmospherical phenomena in Great Britain,* and on the Neilgherries,† for one year.

	Temperature of atmosphere in shade.						Solar radiation.		Moisture No. of days.				Quantity of Rain.
	Mean.	Mean Maximum.	Mean Minimum.	Mean Range.	Maximum.	Minimum.	Maximum.	Mean.	Rain.	Showers.	Cloudy.	Fair.	Inches.
Neilgherries.....	58.6	68.	48.5	16.7	77	38	22.6	15.8	19	81	28	237	44
Great Britain.....	50.3	58.7	41.8	16.9	90.	11.	65.	23.3	14	5	60	160	23

From the above table it appears that the mean temperature of the year, the mean maximum, and mean minimum bear about the same relation to each other, as in Britain, but are about 10° degrees higher, while the daily range is somewhat less. The highest observed temperature, and the lowest in England, are greatly above and below, respectively, the corresponding points on the Neilgherries, that is to say, the extremes are greater. The power of the sun's rays, another most important point in estimating the effects of exposure, is also considerably less on the Neilgherries than in Great Britain, the maximum and mean being both lower.

To sum up, the climate of the Neilgherries is more temperate than that of Great Britain, its whole range being also within the limits considered by all authorities, most favourable to the European constitution.

The number of days in which rain falls in England, (exclusive of snow) greatly exceeds the corresponding number on the hills, their being only 160 fair days in the one case, and 237 in the other; which is important as showing that although the quantity of rain is nearly double, the opportunities for taking exercise are more frequent, in the proportion of 24 to 16, or 1-3d.

There is also a greater equability of temperature, the daily range being less than in Great Britain, and the extremes

* British Medical Almanacs for 1836 and 1838, and Daniel's Meteorological Essays.
† Baikies observations on the Neilgherries.

much lower, viz. 77° and 38°, on the hills, instead of 90° and 11° in England.

These hills from their geographical position, come fully within the influence of the south-west monsoon, while from their elevation, they also feel the north-east. In January, February and March, a north-east wind prevails, during which the sky is clear and serene, the air is cold and bracing, and the whole climate at that period is felt to be highly delightful, and invigorating. In April and May, the weather is showery, but the air continues temperate, and notwithstanding the showers, it is on the whole dry. The winds are chiefly from the north. In June the south-west monsoon sets in; on the hills, however, the direction of the wind is chiefly westerly, and even to the north of west. The climate then becomes and contiuues rainy, till well on in December, and the air during that period is felt to be humid. The rains are sometimes heavy and continued, but not in a degree equal to what is observed on the coast of Malabar. July and August, are perhaps the most rainy months, but September, October and November, are at times also very rainy, and when there are no rains, there are occasional fogs, with cloudy weather. In October the wind gets round to the north and east, and towards the end of December, the dry cold weather is established.

Thus, three months are dry, clear and cold; two months showery, but not damp; and seven months rainy, foggy and cloudy, with fair intervals. The changes in the weather, at least the formation of clouds, whether dry or rainy, are often extremely sudden, and the disappearance of the clouds just as sudden. When clear, the sky is of a deep azure, and distant objects appear remarkably distinct and bright. Iron is slow in acquiring rust, even in rainy weather, and there is not much thunder and lightning

These changes of the seasons are not unattended with derangements of health, which are however generally unimportant. The change in June to a damp, rainy, and variable climate, causes catarrhs and sore throats amongst the

Europeans; but they are slight, unattended with fever, and generally pass off in a few days,even without the aid of medicine. Similar affections take place when the cold sets in and they are then equally slight. Europeans do not suffer much from rheumatism, and Mr. Haines who had considerable experience of the climate, did not know an instance of remittent fever happening in a European, which could be said to have originated on the hills. The native inhabitants also suffer at these two seasons, from slight intermittent fevers, and rheumatic pains in the joints. On the whole the rainy months, after the rain has been once established, appear to be the most healthy. Bowel complaint is not a frequent disease, amongst the natives of the hills, but it occurs chiefly during the rains.

Effects of climate on the health of the native inhabitants.

Mr. Haines examined ten buddagur villages containing a population of 818 souls, and found only eleven sick amongst them; and only one instance of broken health from intermittent fever. Of the eleven sick, one man and two children had fever, all the others were either slight cases of rheumatism, or local complaints. Cutaneous diseases are, as might be expected from the poorness of their circumstances, and the filthiness of their habits, very frequent. No case of cholera has ever been observed on the hills, The epidemic fever which ravaged the low countries in 1809, 10 and 1811, did not in the slightest degree affect the people of the hills. Small pox, a disease from the influence of which no climate or country is perhaps exempt, is occasionally seen, but a gentleman who has resided for a long time on the hills, affirms, that he has never observed a pock marked person amongst the natives; and has known two individuals who brought the disease with them, go through it, without its spreading to others. The health of the inhabitants on the lower parts of the hills, is not particularly mentioned; but a party of pioneers and coolies, natives of the low country, who enjoyed almost uninterrupted good health for a year or two, while employed on the table land; when called to work lower down, on the acclivity of the hill, suffered from remittent fever, of the worst description and many cases ended fatally.

Native servants, who accompany Europeans to the hills, if not well clothed and housed, suffer from the cold of the climate, and are very liable to attacks of fever, and to bowel complaints; Mr. Stoddart mentions also, that he saw several cases of fever amongst them which often lapsed into a fatal form of dysentery.

Mr. Orton observes, that sudden transitions of temperature, and exposure, probably bring into action the latent cause of fever, imbibed in other situations, and says, "the attacks of the disease amongst the followers almost entirely ceased to recur, after they had been sometime on the hills; whilst at places where fever is endemic, the reverse is the case." He had observed also, cases of fever amongst both the buddagurs and kotars, and in one village consisting of 30 families, six people died of it, in five months. In the todar village of Ootacamund, on the other hand, no death had happened for three years. A number of medical men have visited the Neilgherries from time to time, and several have resided there for very considerable periods; and none of them have advanced any observations more unfavourable to the climate, than those just stated, while all concur in opinion that they are free from any endemic, or epidemic sources of disease; and in attributing such complaints as do occur amongst the inhabitants, to poverty, and its attendant privations.

The plateau or table land, is elevated above the reach of the malaria of the wooded tracts, which encircle the hills, and as before mentioned, appears to be free from any sources of miasm.

Effects of the climate on European invalids.

There can be no doubt but the Neilgherry climate is highly restorative in debilitated European subjects, suffering from the effect of tropical heat, and disease consequent on a long residence in India. A sudden feeling of increased strength is experienced on first ascending the hills, with an exhilaration of spirits,—sometimes amounting to a degree of excitement which prevents sleep—and a general vigour of the system, which invalids are too

apt to mistake, for a renovation that is to be permanent, and they therefore indulge too freely in the pleasures of the table, and are apt to expose themselves imprudently to the climate. Those who have suffered much from fever also, frequently experience a recurrence of it, on ascending the hills, and it is apt to return at intervals; but it is unequivocally stated, that the feverish habit subsides, from a lengthened residence on them. There is seldom any sweating stage in the paroxysms of fever, from which such patients suffer, but they frequently experience a distressing sense of vertigo. The rarefaction of the air is stated not to be so hurtful to the lungs, as it is found to be in other elevated regions. Bilious diarrhœa however, and a copious secretion of urine, occur in persons newly arrived. On the whole, from past experience of the effects of the Neilgherry climate, it has been ascertained, that where a low temperature is admitted, on general principles to be favourable, it affords a good prospect of being beneficial in promoting recovery; and the climate appears also, to be favourable to children.

With respect to invalids, affected with organic disease of any of the important organs, the effect of climate, it must be admitted that a sea voyage, and the climate of Europe, offer a better prospect of recovery, than a residence on the hills. The same observation applies also to venereal disease affecting the bones, and to obstinate and extensive ulceration. The voyage of itself, is generally of the greatest benefit, in cases of organic disease, and the length of time usually required for the re-establishment of health, renders a resort to Europe preferable, in instances of that nature. Nevertheless, when circumstances do not admit of the patient returning to Europe, the Neilgherrries may be resorted to with a very encouraging prospect of success, provided that the invalid remains on them a sufficient length of time; for it has been too common to expect that a six months, or even a three months stay there, is sufficient to effect, what an absence of from two to three years, is generally considered necessary to bring about, in Europe.

It is important to keep in view a remark of medical practitioners, that mercury exerts its specific action on the system much more readily in the colder climate of the hills, than in the plains of India, and it is also stated, that half the quantity of that mineral is found sufficient to produce its specific effect on the system.

It is particularly necessary to caution invalids who visit the Neilgherry hills, and indeed all strangers, against exposure to the sun's rays, as well as to excessive cold; for although the solar heat may not be oppressive, but on the contrary agreeable, it is still sufficiently powerful to blister the face and hands, and to produce much constitutional irritation. Cold likewise, and especially heavy dews, produce congestions of the internal organs, and should be carefully guarded against, and flannel clothing should invariably be worn next the skin.

Advantages of the climate for Europeans.

It follows from the preceding remarks, that the chief advantage of the Neilgherry hills, depends upon the moderate and equable temperature of the climate, which of itself is sufficient to cure or effect a decided improvement in a large proportion of intertropical complaints. The change of scenery, and relief from oppressive heat likewise, exert for a time, a favorable moral influence, but this it must be admitted is not permanent, and in no degree equal to that which a return home so generally produces. In the instances of officers therefore, of the civil and military services, a protracted residence on the Neilgherries, may sometimes fail in its object, but in the European soldier, who is usually less under the influence of moral impressions, the climate will in general be found sufficient to restore health in cases requiring chiefly a reduced atmospheric temperature for their cure.

A review, shewing the effects of the climate of the hills in the cases of European soldiers sent to the *Sanatarium*, between the years 1830 and 1832, and also in those of officers who resorted thither for the benefit of their health, during the seven years ending 1832, is given in the following extract from a report by the Medical Board to Government, at the close of that year.

" The convalescent depot at Ootacmund was announced to be ready for the reception of European invalids,in general orders by Government dated the 8th January 1830; and the first detachment of convalescents arrived at the station in May following. The accompanying tabular statements, Nos. 1 and 2, exhibit separately the number of European soldiers, of Her Majesty's, and of the Honorable Company's services, who have been admitted into the depot from its establishment, to the end of October 1832; the diseases on account of which a trial of the Neilgherry climate was recommended; and the degree of success with which the measure has been attended. The general results afforded by these statements, will be at once seen in the following abstract."

	Admitted.				Discharged.					
	In 1830.	In 1831.	In 1832.	Total Admitted.	Cured.	Improved but not cured.	As incurable on the hills.	Total.	Died.	Remaining 1st November, 1832.
Of Her Majesty's Service...	35	30	10	75	42	8	3	53	6	16
Of the Hon. Compy's service.	18	30	15	63	33	3	11	47	4	12
Total..	53	60	25	138	75	11	14	100	10	28

" It thus appears that of 138 men, of both services, received into the depot, 75 have been restored to good health, and were sent to rejoin their respective corps; 11 though not cured have been so much benefited as to be considered fit to return to duty; 14 have been discharged from the depot as incurable in the climate of the Neilgherries,10 have died; and 28, (the majority of whom had but recently joined,) continued under treatment on the 1st of November, 1832. The average period of detention in the depot, of those reported cured or improved, was 10 months and 4 days; and of those discharged as incurable, 12 months and 11 days."

No. 1.

1830, 31, *and* 32.

Convalescent Depot on the Neilgherry Hills.

Return of European soldiers of H. M.'s service.

	Remained 1st Jan. 1830.	Admitted in 1830.	Do. in 1831.	Do. in 1832.	Total.	Discharged.				Died.	Remaining 1st Nov. 1832.
						Cured.	Improved, but not cured.	As incurable on the Neilgherries.	Total.		
Atrophy	0	1	0	0	1	1	0	0	1	0	0
Catarrh	0	0	0	1	1	0	0	0	0	0	1
Diarrhœa	0	3	3	3	9	5	0	1	6	0	3
Dysentery	0	10	8	4	22	12	3	1	16	1	5
Epilepsy	0	1	0	0	1	1	0	0	1	0	0
Fever continued	0	3	0	0	3	1	2	0	3	0	0
„ Intermittent	0	3	0	0	3	3	0	0	3	0	0
„ Remittent	0	0	5	0	5	3	0	0	3	0	2
Headache	0	3	1	0	4	2	1	0	3	0	1
Hepatic disease	0	6	4	1	11	6	1	0	7	1	3
Indigestion	0	2	0	0	2	1	0	0	1	1	0
Inflammation, abdominal	0	0	2	0	2	1	0	0	1	1	0
„ of Spleen	0	0	1	0	1	0	0	0	0	1	0
Ophthalmy	0	1	0	0	1	1	0	0	1	0	0
Palpitation of heart	0	1	0	0	1	1	0	0	1	0	0
Palsy	0	0	2	0	2	0	1	0	1	1	0
Piles	0	0	2	1	3	3	0	0	3	0	0
Rheumatism	0	0	1	0	1	0	0	0	0	0	1
Scurvy	0	1	1	0	2	1	0	1	2	0	0
Total	0	35	30	10	75	42	8	3	53	6	16

No. 2.

1830, 31, *and* 32.

Convalescent Depot on the Neilgherry Hills.

Return of European Soldiers of the H. C. Service.

	Remained 1st Jany. 1840.	Admitted in 1830.	Do. in 1831.	Do. in 1832.	Total.	Discharged.				Died.	Remaining 1st Nov. 1832.
						Cured.	Improved, but not cured.	As incurable on the Neilgherries.	Total.		
Abscess lumbar	0	0	1	0	1	1	0	0	1	0	0
Atrophy	0	0	4	1	5	4	0	1	5	0	0
Diarrhœa	0	1	2	0	3	2	0	1	3	0	0
Dropsy	0	2	0	1	3	1	0	0	1	1	1
Dysentery	0	2	4	2	8	3	0	3	6	0	2
Fever continued	0	0	2	0	2	2	0	0	2	0	0
„ intermittent	0	1	0	0	1	1	0	0	1	0	0
Headache	0	1	0	0	1	1	0	0	1	0	0
Hepatic disease	0	6	10	5	21	11	2	5	18	1	2
Indigestion	0	0	0	2	2	0	0	0	0	0	2
Inflammation abdominal	0	0	0	1	1	0	0	0	0	0	1
„ cephalic	0	0	1	0	1	0	0	0	0	1	0
Inflammation of bladder	0	0	0	1	1	0	0	0	0	0	1
Injury of Spine	0	1	0	0	1	1	0	0	1	0	0
Palpitation of heart	0	1	0	0	1	1	0	0	1	0	0
Palsy	0	1	0	0	1	0	1	0	1	0	0
Rheumatism	0	2	6	0	8	5	0	1	6	1	1
Sarcomatous	0	0	0	1	1	0	0	0	0	0	1
Wounds and accidents	0	0	0	1	1	0	0	0	0	0	1
Total	0	18	30	15	63	33	3	11	47	4	12

"As the benefit to be derived from the climate may be supposed to be materially influenced by the age, and duration of residence in India, of the persons resorting to it, it appears desirable to introduce in this place statements affording information on these points, in regard to the European soldiers who have been received into the depot."

Statement showing the ages of the European convalescents sent to the Depot on the Neilgherries, and the results of their cases.

Ages.	Number received into the Depot.	Discharged.				Died.	Remaning 1st November 1832.
		Cured.	Improved but not cured.	As incurable on the hills.	Total.		
His Majesty's troops.....							
Not above 20 years.....	5	4	0	0	4	0	1
From 20 to 25 years.....	35	20	4	2	26	2	7
„ 25 to 30 „	19	11	2	1	14	0	5
„ 30 to 35 „	12	6	1	0	7	2	3
Above 15 years..... ...	4	1	1	0	2	2	0
Total..	75	42	8	3	53	6	16
Honorable Compy's troops..							
Not above 20 years.....	3	3	0	0	3	0	0
From 20 to 25 years.....	25	12	1	7	20	1	4
„ 25 to 30 „	28	15	2	4	21	2	5
„ 30 to 35 „	2	1	0	0	1	0	1
Above 35 years.....	5	2	0	0	2	1	2
Total..	63	33	3	11	47	4	12
General Total .	138	75	11	14	100	10	28

Statement showing the period of residence in India, of the European convalescents sent to the Depot on the Neilgherries, and the results of their cases.

Period of residence in India.	Number received into the Depot.	Discharged.				Died.	Remaining 1st November 1832.
		Cured.	Improved but not cured.	As incurable on the hills.	Total.		
H. Majesty's troops.....							
Under 2 years	8	4	0	1	5	0	3
From 2 to 5 years.....	36	22	4	0	26	2	8
„ 5 to 10 „	18	8	3	2	13	1	4
„ 10 to 15 „	7	2	1	0	3	3	1
Above 15 „	0	0	0	0	0	0	0
Unknown.....	6	6	0	0	6	0	0
Total..	75	42	8	3	53	6	16
Honorable Compy's troops..							
Under 2 years.....	16	9	0	6	15	1	0
From 2 to 5 years.....	19	8	1	5	14	1	4
„ 5 to 10 „	14	8	2	0	10	1	3
„ 10 to 15 „	6	2	0	0	2	0	4
Above 15 „	2	1	0	0	1	0	1
Unknown.....	6	5	0	0	5	1	0
Total..	63	33	3	11	47	4	12
General Total..	138	75	11	14	100	10	28

" It will be observed, from these statements, that the majority of the convalescents were young men, not long resident in India; and the accompanying copy of the circular instructions, by which medical officers were required to be guided in selecting patients for the hills, will show that it has been

an object of particular solicitude to avoid sending thither any severe cases of chronic disease*."

Having thus stated the general condition of the soldiers sent to the depôt, and having shown the extent of the immediate benefit derived by them, the next subject of inquiry is the permanence of that benefit, in the case of men of the Honorable Company's service, respecting whom alone the Medical Board office possesses the requisite information."

On the selection of patients for transfer to the Hills.

*"The Medical Board deem it proper to point out for the guidance of Medical Officers, the cases which are considered likely to derive full benefit from the climate of the Neilgherries, and those, in which either a voyage to sea or a return to Europe, hold out a better prospect of restoration to health.

1st.—"Convalescents from fever, dysentery, and acute hepatitis, who are free from structural disease, but so debilitated as to render it improbable, that they would recover perfectly, under ordinary circumstances in India. These persons should be somewhat advanced in convalescence, and should require but little medical treatment. In cases of private soldiers, the men should in general be able to march, without much assistance in the way of sick carriage.

2dly.—"Persons debilitated from protracted residence in India, whether unaffected with any marked disease, or suffering from dyspepsia, irregular action of the bowels, or other spmptoms of functional derangement of the viscera.

3dly.—"Young men of weakly constitutions, having no actual disease, but unfit for military duty from debility and exhaustion."

A voyage to sea, in preference to a resort to the Neilgherries, is to be recommended in the following cases:

1st.—"To persons who have been long subject to returns of intermittent, or who have repeatedly suffered from attacks of remittent fever.

2dly.—"To those who have either experienced repeated attacks of acute hepatitis, or have long suffered from chronic hepatic or dysenteric affections.

3dly.—"To those labouring under rheumatism, syphilitic, or pseudo-syphilitic affections."

"In the more severe cases of the three last classes, a return to Europe will generally be requisite. In less aggravated cases, a voyage of considerable duration must be considered essential; and leave, either to sea, to the Cape of Good Hope, or places to the eastward of it, or to the Cape and eventually to Europe, according to circumstances, should be recommended."

"The season of the year, and station on the Neilgherries to which patients are recommended to proceed, should be carefully considered; and the precautions, in regard to clothing and exposure, necessary for obviating the bad effects, which might arise from sudden reduction of temperature, on ascending the hills, should be particularly inculcated. Patients who are much enfeebled, and consequently most liable to suffer from such a transition, should, in the first place, proceed to the lower, and more temperate stations either of Kotagherry or the Kotah valley, especially during the monsoon months of June, July and August." Dated, December, 1830.

"The number of men of this service who left the depôt cured was 33, and improved 3. Of these 36, the following is the subsequent history:

25 have rejoined their respective corps,
9 are on route to rejoin,
1 died 25 days after leaving the depôt, and
1 was "transferred to Kaitee."

36

Of the 25 men who thus rejoined,
16 were in good heath,
4 were in improved, but not good health, and
5 were in bad health, and discharged.

25

Of these 25 men,
16 have derived permanent benefit,
3 have not been permanently benefited,
1 has but very lately rejoined in improved, but not good health, and
5 have been discharged from the service, invalided or pensioned.

25

"The 11 men reported as incurable, were only discharged from the depôt, in the course of September and October last, and their cases have not been further disposed of. The oldest of them was not quite 30 years of age, and those longest in the service, had been under four years in India, when sent to the depôt."

Their average age was.....24¼ years.
Average duration of residence in India.. 2 years nearly.
Do. Do. on the hills..... 1 year and 2 months."

"It is sufficiently obvious, therefore, from the preceding statements, that the benefit to the public service derived

from the convalscent depôt, has not been of extensive importance; but it must be admitted, that the establishment has hitherto laboured under great disadvantages. Placed in an elevated and unsheltered situation, without a surrouning wall, the building was fully exposed to the south-west monsoon, while its vicinity to the bazār afforded ready access to spirituous liquors, of which it was found impossible, with the means of restraint at command, to prevent the patients from frequently availing themselves; and its extent was too limited to admit of the desirable measure, of completly separating the convalescent and recqvered men, from those under hospital treatment. A much more extensive and eligible building having, however, been recently appropriated for the purposes of a convalescent depôt, there is every reason to expect that the more important disadvantages, experienced, will now be removed; and that a more satisfactory trial, than has hitherto been possible, will thus be afforded to the climate."

"But, although the benefit hitherto derived from the convalescent depôt cannot, under these circumstances, be considered as indicating, in a perfectly satisfactory manner, the probable extent of the utility of a matured and well regulated establishment of that nature, we think it proper, on the present occasion to state, that, from the information before us, we see no grounds for anticipating, from such an establishment, any results of much importance in a financial or political point of view, if indeed its maintenance should not be attended with positive loss. When the distance of the greater number of stations occupied by European troops from the Neilgherry hills is considered, it will be obvious, that a resort to them cannot be available for the cure of acute diseases; and the medical reports, while they generally represent the climate in the most favourable point of view, tend to show that it is not well adapted for the cure of chronic diseases, attributable to a tropical climate, which chiefly lead to inefficiency, and consequently to discharge from the service, or transfer to the invalid or pension establishments."

No. 3.

Statement showing the diseases on account of which Men of H. Majesty's Regiments, serving under the Presidency of Fort St. George, were invalided during the years 1826, 1827, 1828, *and* 1829.

	Principal diseases attributable to a tropical climate, and likely to be cured, or materially benefited, by a return to Europe.								Chronic diseases not likely to be cured in any climate.														General Total.
	Fever.	Hepatitis.	Rheumatism.	Dysentery.	Diarrhœa.	Dropsy.	Headache.	Total.	Pulmonic affections.	Palsy.	Epilepsy.	Insanity.	Scrophula.	Deafness.	Contraction.	Hernia.	Stricture.	Wounds & accidents.	Ulcers.	Affections of the eye.	Do. of the skin.	Other complaints.	Total.	
1826.....	6	31	23	13	29	4	2	108	4	5	3	2	3	1	0	8	0	4	5	17	1	27	80	188
1827.....	7	36	63	21	9	8	4	148	9	6	2	2	6	4	4	5	1	8	7	15	0	8	77	225
1828.....	13	44	43	18	4	4	2	128	13	2	4	2	2	4	2	7	1	10	6	2	0	12	67	195
1829.....	6	59	23	14	1	0	1	104	11	2	0	4	0	0	2	4	2	2	1	9	2	23	62	166
Total.....	32	170	152	66	43	16	9	488	37	15	9	10	11	9	8	24	4	24	19	43	3	70	286	774
Annual Average....	8	42½	38	16½	10¾	4	2¼	122																193½

"On examination of the returns of men, of H. Majesty's regiments serving under this presidency, invalided from 1826 to 1829 inclusively, the four years preceding the establishment of the depôt, it appears that the average number annually invalided, on account of diseases attributable to a tropical climate, and likely to be cured, or materially benefited, by a return to Europe, was 122; the diseases affording this aggregate, being in the following proportions."

Fever.....	8	Of these the principal diseases were.	
Hepatitis.....	42½		
Rheumatism....	38	Hepatitis.....	42½
Dysentery.....	16½	Rheumatism....	38
Diarrhœa.....	10½	Bowel complains.	27¼
Dropsy.....	4		107¼,
Headache.....	2¼	or nearly 9-10ths of the whole	
Total...	122		

"It thus appears that hepatitis, rheumatism and bowel complaints, all of long duration, constitute nearly 9-10ths of the whole number of cases, in which a change of climate affords a prospect of recovery. And further it appears from the reports* of the medical officers on the spot, that the climate of the Neilgherries, is not considered favourable for recovery, from these diseases; and it consequently follows, that but a small proportion of cases of confirmed tropical disease, remain, in which it can be expected to effect a cure. As already noticed, it promises to be chiefly useful in cases of tedious convalescence from acute diseases; and in persons, who without marked disease, become prematurely debilitated by service in India, it may often effect such an improvement, as will enable them to continue at their duty for some time longer."

* Dr, Stephenson, the medical officer in charge of the Depôt, in his half yearly report dated 1st July, 1832, thus expresses his opinion.
"Hepatic disease." "No chronic case of hepatitis should in my opinion, ever be sent to the station."
"Rheumatism." "This is another disease to which the climate of the Hills is not well adapted, being too cold and windy for such affections."
"Diarrhœa and Dysentery." "I must observe that I do not consider the climate well adapted to these diseases, especially in the chronic form, or when combined with hepatic affections, as they are constantly subject to relapse from congestion, by exposure to the cold atmosphere of the hills."

"Having now submitted such information as appeared requisite, respecting European invalid soldiers, we proceed to the consideration of the results in the cases of the officers of government, civil and military, who have visited the Neilgherries on account of their health. As the number of these visitors, prior to the commencement of 1826, was not considerable, and as they did not in many instances, apply to the medical officer stationed on the hills, no regular account of them can be given before that period. The following abstract, exhibits the number who have annually resorted to the hills, from the begining of 1826, to the 1st October last, and the results of the cases."

Abstract return of Sick Officers, Civil and Military, treated on the Neilgherries from 1st January 1826, to 30th September 1832.

Years.	Remained 1st January 1826.	Admitted.	Total.	Discharged.						Died.	Remaining 1st October 1832.
				Cured.	Improved but not cured.	No better.	By transfer to another surgn.	On sick certificate to Europe	Total.		
1826.	7	9	16	6	4	1	0	0	11	0	0
1827.	0	29	29	9	5	4	0	2	20	0	0
1828.	0	35	35	8	16	0	0	0	24	1	0
1829.	0	43	43	31	0	0	12	2	45	3	0
1830.	0	42	42	24	6	0	4	7	41	2	0
1831.	0	40	40	22	10	0	0	9	41	3	0
1832.	0	33	33	19	4	1	0	2	26	2	19
Total..	7	231	238	119	45	6	16	22	208	11	19
Officers of the Bombay Establishment.....											
1830.	0	14	14	0	0	0	0	0	0	0	0
1831.	0	13	13	7	3	0	0	3	13	1	0
1832.	0	24	24	10	6	0	0	0	16	0	21
Total..	7	51	51	17	9	0	0	3	29	1	21
General Total..	7	282	289	136	54	6	16	25	237	12	40

"The officers of the Bombay presidency, have for some time been placed under the care of a medical officer of that establishment, but as a return of them has been furnished, we have thought it proper to introduce it, in order to render

the information as complete as possible. We have no accounts respecting Europeans not in the public service, who may have visited the Neilgherries, but have reason to believe, that their number cannot have been considerable.

" From the preceding abstract it appears, that during the period of six years and nine months which it embraces, 289 officers resorted to the Neilgherries on account of their health. Of these

136 are reported to have been cured,
54 improved but not cured,
6 derived no benefit,
16 were transferred to the care of another medical officer,
25 proceded on sick certificate to Europe,
12 died on the hills, and
40 remained under treatment on the 1st of October last.

Total...289

" The average duration of residence on the hills, of those reported cured was 7 months, of those improved but not cured, 7½ months, and of those who proceeded from thence to Europe on sick certificate, 6⅔ months."

With respect to the permanence of the benefit, there are no means for affording such precise information in the case of officers, as in that of European soldiers: but the following statements contain the whole information on this head of inquiry, respecting the officers treated by surgeons of this establishment, which could be collected from all available sources; of the 119, exhibited in the first part of the preceding abstract as having been cured,

13 proceeded to Europe within one year,
4 do. do. within the second year,
8 do. do. within the third year,

Total.....25

" Of the 45 reported as relieved or improved.

13 proceeded to Europe within one year,
2 do. do. within the second year,
2 do. do. within the third year,

Total.....17

" The 42 who thus appear to have proceeded to Europe being deducted from 164, the whole number who derived benefit from the climate, 122 remain to be accounted for. Of these the following is the subsequent history."

75 have derived permanent benefit,
23 have not been permanently benefited,
2 died within a few months after leaving the hills,
22 being officers of other presidencies, there are no means of tracing their subsequent history.

Total.....122

Medical Board Office,
24th December 1832.

Eighteen months after the date of the preceding report, the Government being satisfied that the benefits of the establishment for sick soldiers, were in no way commensurate with the expense attending it, and that it could be discontinued without any inconvenience of consequence, resolved that the Depôt should be abolished in July 1844. It was therefore in accordance with that resolution broken up at that period; but the hills have still continued to be resorted to, and in an increasing degree, by sick officers and their families; and the following tables, Nos. 4, 5, and 6, exhibit the number of admissions from each disease,and the results for a period of 18 years amongst the officers, and for a period of seven years, amongst the ladies and children.

Table No. 7, exhibits the sickness and mortality amongst a small body of prisoners (convicts); from 1834 to 1841 inclusive.

No. 4.—Table exhibiting the number of admissions &c. amongst the European Officers, from 1826 to 1843 inclusive.

CLASSES.	DISEASES.	Admitted.	Discharged.				Died.	Remaining.
			Cured.	Relieved.	Transferred.	To Europe.		
Fevers.....	Febri sephemera	5	4	0	0	1	0	0
	„ intermit. quot.	97	60	15	6	6	1	9
	„ tertiana.....	6	5	1	0	0	0	0
	„ remittens.....	30	18	3	3	2	1	3
	„ com. continua	10	7	1	0	0	0	2
Diseases of the Abdominal Viscera.....	Diarrhœa.....	13	7	2	2	0	2	0
	Dysenteria.....	30	17	1	4	3	4	1
	Colica.....	2	2	0	0	0	0	0
	Obst patio.....	6	0	0	0	2	1	3
	Gastritis.....	2	0	0	1	1	0	0
	Enteritis.....	3	2	0	0	0	1	0
	Dyspepsia.....	251	160	49	5	18	3	16
	Hemorrhois.....	5	2	3	0	0	0	0
	Spleuitis.....	1	0	0	0	1	0	0
	Hepatitis.....	126	68	27	4	14	7	6
Diseases of the Lungs	Cynanche.....	2	1	0	0	0	0	1
	Catarrhus.....	6	4	1	0	0	1	0
	Hœmoptysis.....	1	1	0	0	0	0	0
	Phthisis plumonalis.....	1	0	0	0	1	0	0
	Pneumonia.....	2	1	0	0	0	1	0
	Dyspnœa.....	1	1	0	0	0	0	0
	Morbus cordis..	3	1	1	0	0	0	1
Diseases of the Brain.	Apoplexia.....	3	1	0	0	0	2	0
	Epilepsia.....	3	1	1	0	0	0	1
	Paralysis.....	12	4	4	2	1	1	0
	Hemiplegia ...	2	1	1	0	0	0	
	Concussio cerebri.....	3	1	1	0	0	1	0
	Mania.....	1	1	0	0	0	0	0
	Delirium tremens.....	2	1	0	0	0	1	0
	Hypochondriasis	3	1	1	1	0	0	0
	Melancholia....	1	0	1	0	0	0	0
	Cephalalgia	21	16	0	1	2	0	2
	Neuralgia.....	1	0	0	0	1	0	0
	Varicella.....	2	2	0	0	0	0	0
Dropsies....	Anasarca.....	3	0	1	0	0	2	0
	Ascites.....	1	1	0	0	0	0	0
Rheumatic affections.	Rheumatismus.	27	17	5	0	5	0	0
	Arthritis.....	1	0	0	0	1	0	0
	Podagra.....	2	0	0	1	0	0	1
Venereal affections..	Syphilis primitiva.....	8	5	1	0	2	1	0
	„ consecutiva	11	3	4	0	1	0	2
	Dysuria.....	1	0	0	1	0	0	0
	Gonorrhœa.....	6	6	0	0	0	0	0
	Hernia humoralis.....	6	3	0	1	1	0	1
	Strictura urethræ.....	7	6	1	0	0	0	0
	Diabetes.....	1	1	0	0	0	0	0
	Ischuria.....	1	0	0	0	0	0	1
	Debilitas.....	16	13	2	0	1	0	0
Specific diseases.....	Lepra (vulgaris)	1	1	0	0	0	0	0
	Atrophia.....	7	2	0	0	3	0	2
	Scrophula.....	3	2	0	0	0	0	1
	Scorbutus.....	1	1	0	1	0	0	0
	Cachexia.....	6	4	0	1	0	0	1
	Morbi Oculorum	12	5	4	0	0	0	2
	„ cutis.....	7	3	2	0	2	0	0
	Phlogosis.....	12	7	4	0	0	0	1
	Ulcers.....	17	9	4	0	2	1	1
	Bubo simplex..	8	5	2	0	0	0	1
	Hepatic derangments.....	4	2	2	0	0	0	0
	Other diseases..	32	23	3	1	2	1	2
	Total.....	858	509	148	35	73	32	61

No. 5.—*Table exhibiting the number of admissions, &c. amongst European Ladies, from* 1837 *to* 1843 *inclusive.*

CLASSES.	DISEASES.	Admitted.	Discharged.				Died.	Remaining.
			Cured.	Relieved.	Transferred.	To Europe.		
Fevers.....	Febris ephemera	5	4	0	0	0	0	1
	„ intermit quot.	12	11	0	0	1	0	0
	„ remittens.....	2	1	0	0	0	1	0
	„ com: continua	1	1	0	0	0	0	0
Diseases of the abdominal viscera.....	Diarrhœa.....	36	33	0	0	0	0	3
	Dysenteria.....	8	7	0	0	0	1	0
	Obstipatio.....	166	140	1	0	0	0	25
	Dyspepsia.....	97	79	0	0	0	0	18
	Gastritis.....	1	1	0	0	0	0	0
	Splenitis.....	2	1	0	0	1	0	0
	Icterus.....	3	2	0	0	0	0	1
	Hepatitis.....	27	18	5	0	1	1	2
Diseases of the Lungs	Cynanche.....	4	4	0	0	0	0	0
	Influenza.....	12	10	0	0	0	2	0
	Catarrhus.....	26	25	0	0	0	0	1
	Pneumonia.....	1	1	0	0	0	0	0
	Hydrothorax...	1	0	0	0	0	1	0
Diseases of the Brain.	Cephalalgia...	6	6	0	0	0	0	0
	Neuralgia.....	19	16	1	1	0	0	1
	Hysteria.....	22	20	1	0	0	0	1
	Epilepsia.....	1	0	1	0	0	0	0
	Paralysis.....	2	1	0	0	1	0	0
	Mania.....	2	1	1	0	0	0	0
	Variola.....	1	1	0	0	0	0	0
	Ascites.....	1	1	0	0	0	0	0
Rheumatic affections.	Rheumatismus..	4	4	0	0	0	0	0
	Odontalgia.....	1	1	0	0	0	0	0
Specific diseases.....	Leucorrhœa....	6	5	1	0	0	0	0
	Amenorrhœa..	32	29	0	0	0	0	3
	Menorrhagia...	2	2	0	0	0	0	0
	Parturito.....	56	54	0	0	0	2	0
	Abortus.....	2	2	0	0	0	0	0
	Polypus in utero	2	2	0	0	0	0	0
	Abscessus.....	4	4	0	0	0	0	0
	Debilitas..... ..	71	69	0	2	0	0	0
	Vermes.....	1	1	0	0	0	0	0
	Noli me tangere.	1	1	0	0	0	0	0
	Morbi oculorum	1	0	0	0	1	0	0
	Other diseases..	150	137	9	0	1	3	0
	Total....	791	695	20	3	6	11	56

No. 6.—*Table exhibiting the number of admissions, &c. amongst European Children, from* 1837 *to* 1843 *inclusive.*

CLASSES.	DISEASES.	Admitted.	Discharged.				Died.	Remaining.
			Cured.	Relieved.	Transferred.	To Europe.		
Fevers.....	Febrisephemera	17	16	0	0	0	0	1
	„ intermit quot.	9	9	0	0	0	0	0
	„ com: cont....	4	4	0	0	0	0	0
Diseases of the abdominal viscera.....	Diarrhœa.....	195	186	2	1	0	2	4
	Dysenteria.....	37	31	0	0	0	4	2
	Obstipatio.....	155	146	0	0	0	0	9
	Dyspepsia.....	34	28	0	0	0	0	6
	Hepatitis.....	9	8	0	0	0	1	0
	Defective or depraved hepatic secretion.....	49	49	0	0	0	0	0
	Marasmus.....	13	10	8	0	0	0	0
Diseases of the lungs.	Cynanche.....	9	7	0	0	0	2	0
	Laryngismus stridulus.....	2	2	0	0	0	0	0
	Catarrhus.....	22	22	0	0	0	0	0
	Pertussis.....	3	2	0	0	0	0	1
	Phthisis pulmonalis.....	1	0	0	1	0	0	0
	Influenza.....	9	9	0	0	0	0	0
Diseases of the brain.	Convulsio.....	3	1	0	0	0	2	0
	Epilepsia.....	1	0	0	0	1	0	0
	Hydrocephalus.	2	1	0	0	0	1	0
Eruptive fevers.....	Varicella.....	2	2	0	0	0	0	0
	Rubeola.....	11	11	0	0	0	0	0
	Dentitio.....	176	129	26	1	0	6	14
	Vermes.....	14	14	0	0	0	0	0
	Tinea.....	1	1	0	0	0	0	0
	Debilitas.....	5	5	0	0	0	0	0
	Atrophia.....	7	4	0	0	0	1	2
	Scorbutus.....	6	5	1	0	0	0	0
	Morbi oculorum	3	3	0	0	0	0	0
	„ cutis.....	1	1	0	0	0	0	0
	Other diseases..	5	4	0	0	0	0	1
	Total..	805	710	32	3	1	19	40

JAIL OF OOTACAMUND.

No. 7.—*Table exhibiting the Number of Admissions and Deaths, of the convicts, from each Class of Disease, for* 8 *years, from* 1834 *to* 1841 *inclusive.*

CLASSES.	DISEASES.	From 1834 to 1841, inclusive. Aggregate strength 840. 1st Half. Ad.	1st Half. Dd.	2d. Half. Ad.	2d. Half. Dd.	Admissions and deaths from each class of disease. 1st Half. Ad.	1st Half. Dd.	2d. Half. Ad.	2d. Half. Dd.	Total admissions from each class.	Total deaths from each class.	Per centage of sick to strength.	Per centage of deaths to sick treated.
Fevers.....	Febris ephemera	244	1	298	0								
	„ intermit quot.	178	1	235	3								
	„ remittens....	0	0	1	1	485	2	535	4	1020	6	121·428	0·588
	„ com : cont....	63	0	1	0								
	Cholera	0	0	0	0								
Diseases of the abdominal viscera.....	Diarrhœa.....	37	0	33	1								
	Dysenteria.....	41	3	35	4								
	Colica.....	5	0	0	0								
	Obstipatio... ..	89	0	75	0								
	Hœmorrhois....	5	0	2	0	215	3	201	5	416	8	49·523	1·923
	Gastritis.....	0	0	1	0								
	Dyspepsia.....	35	0	55	0								
	Hepatitis.....	3	0	0	0								
Diseases of the Lungs	Catarrhus.....	37	5	37	1								
	Pneumonia.. ..	13	1	13	4	50	6	50	5	100	11	11·904	11·000
Diseases of the Brain.	Apoplexia.....	1	0	1	0								
	Epilepsia	0	0	1	1								
	Paralysis	4	1	0	0	54	1	20	1	74	2	8·809	2·702
	Cephalalgia....	49	0	18	0								
Eruptive fevers.....	Varicella.....	65	0	0	0								
	Erysipelas.....	0	0	1	0	65	0	1	0	65	0	7·738	0·000
	Anasarca.....	4	1	1	2	4	1	1	2	5	3	0·595	60·000
Rheumatic affections.	Rheumatismus..	35	0	53	0								
	Neuralgia	1	0	0	0								
	Odontalgia.....	2	0	3	0	38	0	56	0	94	0	11·190	0·000
Venereal affections..	Gonorrhœa.....	0	0	0	0								
	Syphilis primitiva.....	0	0	0	0								
	„ consecutiva..	1	0	0	0	2	0	1	0	3	0	0·357	0·000
	Hernia humoralis.....	1	0	1	0								
Specific diseases.....	Atrophia.....	4	0	2	0								
	Dracunculus....	4	0	0	0	8	0	2	0	10	0	1·190	0·000
Diseases of the Eye.	Morbi oculourm	8	0	12	0	8	0	12	0	20	0	2·380	0·000
Do. Skin.	„ cutis.....	5	0	8	0	5	0	8	0	13	0	1·547	0·000
	Other diseases..	115	1	175	0	115	1	175	0	290	1	34·523	0·344
	Total....	1049	14	1062	17	1049	14	1062	17	2111	31	251.309	1·468

Note.—Per centage of deaths to strength 3·690.

The Hills a station for European regiments.

The expediency of stationing European regiments on the Neilgherry hills, on first arrival in India, has been under the consideration of the authorities from time to time; and references have been made to the Medical officers of this establishment, who were best acquainted with the climate, for their opinions. It is not however, proposed in this place to discuss the subject,or to advert to the various arguments which have been advanced on both sides of the question, suffice it to say that the Medical officers in general have been favourable to the measure, and it has been strongly urged by some, that a European regiment in such a climate, beyond, as it has been said, the influence of the epidemic diseases met with in the low country, might be expected to be in as efficient a state for service when called on, as it would be in Europe, or when newly arrived in the country. The subject however is one for consideration in a *financial,* more than *medical* point of view, and though it may be concluded, that the mortality would be very moderate in a corps so placed, and that whilst actually stationed on the hills, the men would preserve both health and vigour, it is still doubtful, if the soldiers would be as efficient in the field, or as well able to bear up against the hardships, and exposure on active service, as those stationed in the low country, or who to a certain extent had become acclimatised.

Botany.

The botany and zoology of the hills, are subjects so comprehensive as to require a separate treatise for their discussion, and the records of the Medical Board, moreover, do not contain the necessary information regarding them, to admit of their being fully discussed. It is however thought proper to give the following extracts from the works of Drs. Baikie and Birch, with some notice of the botanical productions by Baron Hugël.

"The botanical productions of the hills are of the richest and most varied description, but they present a field as yet almost unexplored. From the peculiar nature of the climate, and their position between a tropical and temperate

zone, they partake of the characters and advantages of both; and plants of the most opposite descriptions, from the luxuriant produce of a rich soil under the influence of a tropical sun, to the small Alpine shrub, which niches itself in an angle of the bare rook, may be found, in the compass of a single day's journey. A difficulty in the way of a collector, whose leisure does not admit of his passing a considerable time on the hills, is, that there are plants coming into flower every month of the year, and it would require the labour of many seasons, added to indefatigable industry, to exhaust the Flora."—*Baikie*

The following observations on the general characters of the vegetation are from the pen of Baron Hügel, an officer of the Austrian army, who has travelled very extensively over Europe, and a great part of Asia, in the pursuit of botanical knowledge, and who paid the hills a hurried visit in March 1839. It is much to be regretted, that his plans did not admit of his making a longer stay, as he found much to interest him, and there was reason to expect some valuable information on the capabilities of the hills, from this talented individual, who, to a profound knowledge of the technicology of botany, united an intimate acquaintance with the practical application of the science to horticulture, and all other useful purposes.

"Having been only a few weeks on the Neilgherry Hills, although during that time I traversed them in all directions, I should not be able to give an account of the hill country I have explored, without the kindness of the Rev. B. Schmidt, who having resided at Ootacamund a long time, has put his herbarium at my disposal. Unfortunately the greatest part of the plants, being new or described only of late, more time and books would have been required, than a traveller possesses, in order to pronounce on their species, without the risk of exposing himself. The following pages contain therefore only general remarks on the vegetation and families of plants."

" In every part of the globe, the vegetation, considered as a '*tout ensemble,*' has its peculiar characters, or, as I would say *physiognomy*, which usually changes only at great intervals, and one part of the features of which, forms a portion of the physiognomy of the next. Thus we see some species, remarkable for their size, even in Norway, and in the uttermost northern boundaries of vegetation, form a part of that of the centre of Europe; whilst the plants which most frequently inhabit these woods are found in the north of Italy, and some of them even both in Italy and in Sicily, countries which, notwithstanding, differ from each other infinitely in their physiognomy.

" The same is the case, and even in a higher degree, with respect to tropical countries; the plants change more according to the soil, and the earth on which they grow, than according to the distance. To prove this, I would mention India, in which country, wherever the same soil is found, one may be sure to find not only the same families, but also the same species. I forbear mentioning instances, as they would prove too numerous. The high mountains throughout the globe possess a vegetation entirely different from that of the low country, and even from that of the lower mountains; but which present every where not only the same species, but often the same families, and always the same forms.

" It was very interesting to me to examine the Neilgherry hills, which perhaps cannot be classed among the Alps of our globe, but which have a vegetation quite Alpine, embellished and enlarged by the tropical sun, and the perpendicular beams of light; nearly all the forms of plants of the European Alps, with few exceptions, are found also here. A great number of families and genera are similar, but not one single species which I had occasion to observe is the same, with the exception perhaps of viola canina, which might be one of those subvariations, as viola canina, alpina, pyreniana, neglecta, &c. which I have not sufficiently compared. Berberis, so similar to B. communis, differs from it; it is perhaps B. vulgaris nigra of the Levant. Most other plants, as

rubus fruticosus, fragaria silvestris, &c. have been called so, by persons who suffered themselves to be deceived by a superficial (slight) resemblance."

" It would be very difficult for me, without an herbarium, without books, and even engravings, to speak positively, and to state that the Neilgherries have no species in common with any other part of the globe. For instance, I think the mahonia D. C. which grows there, is the fascicularis of America, &c. but the difference in the physiognomy of vegetation is as great as between that of Tornea in Sweden and that of Naples."

" The family of the compositæ is pretty numerous on the Neilgherries, as is the case on all high mountains, particularly the genus gnaphalium; the family of the Ericeæ veræ is found only in those genera which approach nearest to vaccinium; some species of ranuncularia, two of clematis, one magnoliaceæ, (I think of the subdivison of michelia, but not champaca:) some fine species of the cruciferæ? I can only say, that with regard to all these, the plants which I had in my power to examine and compare, are different from similar species found eleswere."

" A remarkable conformity exists between the Neilgherry plants, and those of the table-land and on the mountains of Nowera Ellia in Ceylon. This last place has many species entirely the same with those of the Neilgherries; many are but sub-variations of the same species, that is, rhododendron arboreum differs but little; the corolla is always of one colour, a deep red without the least spot. " Ficarræ, none*; umbelliferæ, some splendid species; caprifoliaceæ, some species: two gentianeæ, one of them with a beautiful blue flower, exacum bicolor? bignonia in the valleys, a beautiful species. Instead of the cistineæ of our mountains, we have here beautiful melastomacea, which crowns the highest mountains. Drosera, one†; malvacea, some species; geraniaceæ, none‡; some species are found on Nowera Ellia;

* One in Orange Valley since found. (S.) † About Ootacamund we have two. (S.)
‡ One common about Ootacamund. (S.)

hypericea, three. The leguminosa are not numerous, and the genus crotaleria, so abundant in India, producing here colossal plants, comprehends two-thirds of all the leguminosa. A fine species of rosa, with large white§ flower. One passiflora; beautiful cucurbitaceæ; a beautiful species of the crassulacea: a colossal species of solanum; some species of labiatæ; a few verbenacea and euphorbiaceæ. Of the urtica family only one, but in several beautiful varieties. None of the coniferæ. One Salix. Some beautiful and well distinguished Orchidea, bulbous; no amaryllideæ; few asphodeliæ; one tulipaceæ; A beautiful lilium, with one flower; and several species of the commelinea."

"The season being unfavourable for the gramineæ, when I was on the Neilgherries, I can say nothing of them*; but, on the contrary, nothing can be finer than the filices, the species of which are endless, from the fern tree, to the smallest plants. Fungi do not exist at all here†."

"To come back to the physiognomy of the vegetation, it is beautiful, smiling, flourishing; its expression is that of health, of a reproductive vigour, which, strong as it is, remains always noble and elegant."

"Having descended the Neilgherries on all sides, as far as the tropical regions, I have found a very singular thing, viz. a middle region between the Neilgherry Hills, and the usual vegetation of Malabar or Mysore, and which takes the place of our sub-alpine vegetation; I have found there several magnificent plants often of colossal size, and which vary greatly in the different passes of Goodaloor, of Kotagherry (or Orange valley), Coonoor, and Koondah; in short, the botanist finds in this wonderful country, attractions which few other parts of the earth can offer him, and which a delightful climate permits of his procuring, at the expense of excursions which would be fatiguing even in Europe, but which here only add to his enjoyment."

§ One fine red species also. (S.)

* Grapes are common at Kotagherry and Coonoor. (S.)

† Baron Hügel saw none at the season he was there, but they are common at other times of the year.

Dr. Birch in his topographical report on the hills in 1833, makes the following remarks:

" *The vegetable products are numerous and novel, but as yet few have been found to possess medicinal properties, or to be adapted for commerce, except the holly, *(Berberis)* the wood of which is of a bright yellow, and gives a good dye of the same colour. It grows very generally all over the hills, but is small and stunted, and would barely repay the expense of cutting and carriage. Of fruits, there is the wild raspberry, which grows luxuriantly in most of the woods, and a species of *myrtus*, which produces a wholesome fruit, in flavour and pulp, resembling the gooseberry, but enveloped in a skin like that of a peach. The brazil cherry and peaches have been successfully introduced, but generally speaking, no progress has been made in the cultivation of European fruit trees, although in the culinary department of horticulture, the success has been very marked; potatoes, peas, beans, cabbage, cauliflower, beet, carrots, turnips, celery, lettuce, grow very well, and are of good quality. Attempts have been made to raise both chenna, and coolty, but ineffectually. Barley thrives well, and oats indifferently, the latter produces little grain, but has an enormous stalk, five or six feet in height, and proportionally thick, and which if cut will grow again from the same root, so as to afford excellent fodder for cattle; as also does the blade of the kind of millet, which the natives of the hills chiefly live on."

" The indigenous grasses are coarse and rank, and not good for horses, although horned cattle do not suffer from feeding on them. Owing to this, and the coldness and humidity of the climate throughout the greater part of the year, sheep languish very soon unless fed upon grain; but goats, which have been introduced about eight years, thrive as well here as in the plain; horses fall off in flesh on their first arrival, but never in spirit, which seems to be increased by the bracing air; after a few months they get into good condition, they require to be warmly clothed and housed."

* The salep (orchis mascula) has been discovered in considerable quantity on the hills, but as yet has not become an article of commerce to any great extent.

Zoology. Elephants though numerous in the surrounding country, are not found on the hills, but are occasionally seen in the passes. The principal animals are the royal tiger, cheetas, bears, elk, jackalls, wild dogs, the muntjak, (a species of wild sheep), wild hogs, martens, large flying squirrels, polecats, also a species of fox, and hares in great numbers, porcupines, and otters are also to be met with.—Of birds there is a great variety, many species of which have not as yet been described; besides those peculiar to the plains, and to other mountain ranges, the most remarkable are the woodcock, black-bird and thrush, which appear to be identical with those found in England.

Of snakes and other reptiles there are likewise great varieties, and many of the former are said to be venomous.

More detailed information on these subjects is given in the accounts of the hills, by Baikie published in 1834; by Birch in a topographical report, published in the Madras Journal of Literature and Science No. 20 of 1838; and in Young's account of the Neilgherries, published in the Transactions of the Medical and Physical Society of Calcutta. vol. 4.

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